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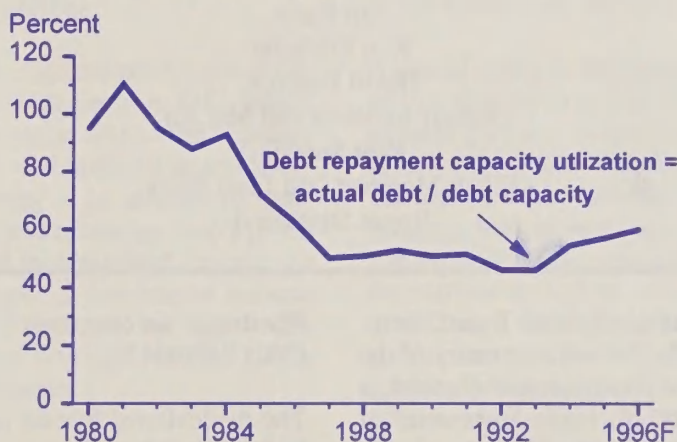
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# Agricultural Income and Finance

## Situation and Outlook Report

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Debt repayment capacity utilization rising,  
...but still below early 1980's





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# Summary

## *Net Farm Income May Rise in 1996, While Net Cash Income Declines*

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Net farm income is forecast at \$37-\$47 billion for 1996, compared with the \$39 billion forecast for 1995. Both forecasts are below the 1990-94 average of \$44 billion. Expected high crop cash receipts and a forecast increase in inventories of unsold feed grains underpin the 1996 forecast. Net cash income is forecast at \$43-\$53 billion, compared with \$51 billion forecast for 1995. An important reason why the net farm income forecast is generally upward and the forecast for net cash income is generally downward is that, in contrast to net farm income, net cash income excludes changes in inventory. The degree and direction by which inventories change can swing widely depending on production and marketing patterns.

Cash receipts from farm marketings are projected at \$184-\$192 billion in 1996, up from the \$184 billion forecast for 1995. Both forecasts would be a record; the previous high was \$180 billion in 1994. Expected large feed grain production and strong feed grain prices stemming from tight world supplies explain much of the higher 1996 forecast. Livestock receipts are expected to remain flat.

Direct government payments for 1996 are forecast at \$3-\$5 billion, while the 1995 forecast is for \$6 billion. Expected high feed grain prices are the main reason for the reduced forecast. Projected government payments for both 1995 and 1996 would be the lowest in the 1990's.

Total production expense, used to calculate net farm income, is forecast at \$169-\$177 billion in 1996, up from \$168 billion in 1995. Part of the forecast increase is tied to the expected rise in planted acres. High forecast feed grain prices and fewer requirements to idle acreage in order to be eligible for government farm program benefits should encourage heavy plantings. High feed grain prices could increase feed expense for livestock producers, which is of special importance because U.S. cattle numbers in 1996 could approach the large levels last seen in the mid-1980's. Higher nitrogen fertilizer prices could increase costs for crop producers.

The value of agricultural assets is forecast at \$985-\$995 billion for 1996, up 3 to 4 percent from 1995. About four-fifths of the increase is due to rising real estate values. Expanding cash receipts, generally good returns to assets, and favorable interest rates are supporting continued growth in farm sector

capital investments. Farm business debt could rise above \$155 billion by the end of 1996, the highest level since 1986. However, interest expense could decline, as lower rates offset the rise in debt. Overall farm debt in 1996 should be about 60 percent of what farm income can support, also the highest level since 1986.

Given trends developing for 1996—higher crop cash receipts, flat livestock receipts, smaller government payments, and slightly lower net cash income:

- Net cash income could decline proportionally more on the smallest farms than on the largest ones. The smallest farms traditionally earn a larger proportion of their income from livestock sales and government payments.
- Farms that specialize in red meat production could have proportionally larger dips in their net cash income than other types of farms. Because they depend on livestock for about 90 percent of their income, farms specializing in red meat likely will face higher feed expenses.
- Midwestern farms could have proportionally smaller declines in their net cash income compared with farms in other parts of the country. The Midwest is by far the Nation's largest producer of corn and soybeans, the crops for which cash receipts are forecast to increase the most.

A special article in this issue looks at the financial performance of U.S. farm business in 1994. USDA's latest Farm Costs and Returns Survey, shows that even though 1994 saw none of the adverse weather that decreased production the year before, net income from farming for the average commercial farm business was up less than 1 percent. While the year-to-year variation in average income was not statistically significant, the composition of net income did change. Government payments were down significantly. The reduction in cash expenses offset the decline in gross cash income and was enough for income to rise from an average of \$37,997 per farm in 1993 to an average of \$38,284 in 1994. In 1994, 6 percent of commercial farm businesses were in a vulnerable financial position based on their combined net farm income and debt-to-asset ratios.

A second special article outlines the issues involved in accounting for forestry product sales in farm income estimates.



## Crop Receipts May Be a Record in 1996, While Livestock Receipts Are Flat

*Tight world feed grain stocks should boost 1996 feed grain prices, contributing to higher crop cash receipts and holding down government price support payments. On the other hand, high feed grain prices could increase costs for livestock producers.*

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Net cash income is forecast at \$43-\$53 billion for 1996, compared with \$51 billion for 1995. During 1990-94, net cash income averaged \$53 billion. When net cash income goes down, farm operators have less cash available to support their families, pay farm or nonfarm debt, pay taxes, purchase equipment, or for other needs. Because net cash income compares revenues and expenses as they occur over the calendar year, it is subject to year-to-year fluctuations that stem from changes in marketing patterns. For example, a farmer might produce a bumper corn crop in 1995 but hold it to sell in 1996 hoping that prices will go up. Even though the corn crop might eventually earn the farmer a profit, none of the potential income from the corn is included when calculating 1995 net cash income.

Net farm income, which is a broader measure of profits generated by production agriculture, is forecast at \$37-\$47 billion in 1996. For perspective, net farm income averaged \$44 billion in 1990-94 and is currently estimated at \$39 billion for 1995. In contrast to net cash income, net farm income includes not only cash income such as crop and livestock sales, but also noncash income such as the value of commodities produced but not yet sold and the value of commodities that farmers consume. A forecast increase in farm inventories of crops and livestock is the major reason net farm income is forecast to increase in 1996 while net cash income could decline. Net farm income also accounts for both cash expenses for inputs such as fertilizer, and for noncash expenses, such as the value of machinery used up to produce crops and livestock. For details on how ERS calculates its income measures and for historical farm income numbers see appendix tables 1 and 3.

### ***Agriculture May Make a Larger Contribution To the Economy***

Besides producing income for farm operators and other farm asset owners, production agriculture also contributes to the earnings of farm workers, lenders, and nonfarming landlords. "Net value added" measures this contribution of agriculture to the broader economy with an increase in net value added indicating an increased contribution. Net value added is forecast at \$74-\$84 billion for 1996 and \$76 billion for 1995. The higher 1996 forecast is mostly because of potential higher earnings for farm operators rather than potentially higher earnings for farm workers, lenders, or landlords. During 1990-94, the agriculture sector created an average \$79 billion in net value added compared with the average \$44 billion in net farm income for the same period.

### ***Farm Household Income Expected To Remain Steady***

Consistent with the Census Bureau's definition of self-employment income, farm income to the household is calculated as net cash farm income less depreciation (adjusted for the share received by the senior operator household in the case of multiple-household farms). Average farm household income is expected to remain steady in 1995 and through 1996. Average off-farm income is expected to be between \$39,100 and \$41,100 in 1996, while average self-employment farm income is forecast at \$2,600 to \$5,600.

Most farm households receive some income from off-farm sources, including off-farm wages and salaries, the net income of any off-farm businesses, interest and dividends, and any other off-farm cash income received by household members. According to the most recent estimates from the Farm Costs and Returns Survey, farm households averaged \$38,939 from off-farm sources in 1994, while self-employment income from farming averaged \$5,200.

Total farm household income, on average, is almost the same as that of all U.S. households. Based on the 1994 survey estimates, farm household income from both farm and off-farm sources averaged \$44,140. In comparison, the Bureau of the Census, Department of Commerce, estimated average household income for all U.S. households at \$43,133 in 1994.

### ***Record Potential for Crop Cash Receipts . . .***

Crop cash receipts have contributed 45 percent of farm gross cash income during the 1990's. Crop cash receipts are forecast at \$98-\$103 billion for 1996 and \$97 billion for 1995. Both forecasts would be a record; the previous high was \$92 billion in 1994. Corn and soybeans, the crops that contribute the largest amounts of cash receipts, should have strong showings in 1996. Factors underlying the positive outlook for crop cash receipts are:

- Expected large feed grain production. Feed grain producers will not have to leave any land out of production to be eligible for government payments in 1996. With normal yields, corn production could approach 1994's record.
- Expected strong feed grain prices. World supplies of corn and other feed grains are low, increasing the export demand for U.S. production. These tight supplies could push U.S. corn prices 40 percent higher in early 1996 than they were in early 1995.



- Expected strong soybean prices. Expected high corn prices may encourage corn planting on acres that would have been planted to soybeans, so soybean production could fall in 1996. Reduced U.S. soybean production and low world supplies could boost prices enough to raise soybean cash receipts.

### ***... But Livestock Receipts Could Be Flat***

Livestock cash receipts have contributed 46 percent of farm gross cash income during the 1990's. Livestock cash receipts are forecast at \$85-\$89 billion for 1996 and at \$87 billion for 1995. For perspective, livestock receipts in 1990-94 averaged \$88 billion.

Sales of cattle and calves make up the largest proportion of farm gross cash income of any commodity, 20 percent in the 1990's. In 1995 and 1996, beef production could approach records set in the late 1970's. Despite strong export sales to Japan, Canada, and Korea, demand has not been strong enough to sustain prices in face of this heavy production. Farm prices for cattle in 1995 and 1996 could be the lowest in the 1990's. Cattle and calf receipts may increase slightly in 1996, but receipts for both years could be the lowest since 1987. Appendix table 4 provides information on historical and forecast cash receipts for major commodities.

### ***Direct Government Payments Could Continue To Decline***

Direct government payments to farms include price support payments for crops, conservation program payments, and disaster assistance. For 1996 these payments are forecast at \$3-\$5 billion, while the 1995 forecast is \$6 billion. A portion of the 1996 payments will be for 1995 crops. These forecasts would be the lowest government payments in the 1990's. In 1990-94, direct government payments averaged \$10 billion and were 5 percent of farm gross cash income. As market prices increase, government outlays for price support programs decrease. So tight world feed grain stocks, which should boost 1996 feed grain prices, are the major reason for the lower government payments forecast.

### ***Expenses Forecast To Rise***

Total production expense, used to calculate net farm income, is forecast at \$169-\$177 billion for 1996 and \$168 billion for 1995. During 1990-94, total production expense averaged \$157 billion. Contributing to the higher 1996 expense forecast are:

- Higher feed grain prices. These high prices coupled with large cattle inventories could increase feed expense.
- More planted acres. More acres should lead to more expense for seed, custom work, storage, and other miscellaneous operating expenses.
- High nitrogen fertilizer prices. These are especially important in a year where corn plantings, a heavy nitrogen user, are expected to increase.

In contrast with most other expenses, interest expense is forecast to decline in 1996. Lower interest rates should more than compensate for increasing farm sector debt. For more detail on historic and forecast expenses see appendix table 5.

### ***Net Cash Income Could Decline Proportionally More on Small Farms***

Given the income trends that may be developing for 1996 — higher crop cash receipts, flat livestock receipts, and reduced government payments — let's compare how net cash incomes on different size farms may be affected (also see table 1 in this section). The largest farms, those with \$500,000 or more in sales, could see their net incomes dip 6 percent or more in 1996, while the smallest farms, those with sales under \$50,000, could see a much larger drop of around 40 percent.

Why might income drop more on the smallest farms? In part because a smaller proportion of their gross income comes from crops — 29 percent compared with 47 percent on the largest farms — so they will benefit proportionally less from the forecast increase in cash receipts for commodities such as corn and soybeans. Also, government payments make up a larger proportion of gross cash income on the smallest farms, 9 percent vs. 2 percent for the largest. So, the forecast decline in 1996 payments will decrease net cash income on the smallest farms proportionally more than on the largest. However, keep in mind that many operators of the smallest farms earn more from off-farm work than from producing crops and livestock and that aggregate net cash income is usually negative for this group.

### ***The South Central Region Could See The Largest Percent Decline in Net Cash Income***

As the farm income trends forecast for 1996 will affect farms of various sizes differently, farms in different parts of the country also will be affected differently. For example, producers in the Midwest could see their 1996 net cash income decline only slightly, while South Central producers might experience an income decline of as much as 10 percent (see table 1 for a list of states in each region).

Why might net cash income in the Midwest change proportionally less than net cash income in the South Central part of the country? Less disparity exists among the two regions in the amount of gross cash income coming from crops than was the case for large and small farms. Midwestern producers get 38 percent of their gross cash income from crops while South Central producers get 33 percent. Here the mix of crops creates much of the difference. The Midwest is by far the Nation's most important producer of corn and soybeans — the two crops for which cash receipts could increase the most according to initial forecasts. On the other hand, the South Central region is the Nation's premier producer of cotton, a crop for which current forecasts show no increase in cash receipts.

### ***Farms Specializing in Red Meat Production Could See the Largest Decline in Net Cash Income***

Among types of farms, those specializing in red meat production could have larger declines in 1996 net cash incomes



Table 1--Net cash income could decline the most on small farms and in the South Central region in 1996

Farms with this characteristic:	Could see this change in their 1996 net cash inc. compared with 1995:	Over the last few years their gross cash income has come from:			And their expenses have come from:		
		crops	livestock	Govt. pymts.	feed	fert.	interest
Sales class:		Percent					
\$500,000 or over	-6	47	43	2	15	10	6
\$250,000 - \$499,999	-3	46	39	7	12	16	8
\$100,000 - \$249,999	-4	41	44	8	14	15	9
\$ 50,000 - \$ 99,999	-5	38	44	9	12	14	10
\$ 49,999 or less	-43	29	47	9	12	10	13
Region: 1/							
Northeast	-7	33	60	2	19	9	7
Midwest	-1	38	47	8	14	14	10
Southeast	-2	56	32	3	10	17	8
South Central	-14	33	46	10	13	13	8
West	-10	50	36	4	13	9	8

1/ The states in each region are:

Northeast	- CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT
Midwest	- MI, MN, WI, IL, IN, IA, MO, OH, KS, NE, ND, SD
Southeast	- KY, NC, TN, VA, WV, AL, FL, GA, SC
South Central	- AR, LA, MS, OK, TX
West	- AZ, CO, ID, MT, NV, NM, UT, WY, CA, OR, WA

than other types of farms. ERS considers a farm to specialize in red meat production if 50 percent or more of the total value of everything it produces comes from cattle, hogs, or sheep. Red meat farms have been the most numerous type of farm in the 1990's, about 42 percent of all farms. Appendix table 6 provides net cash income forecasts for farms specializing in several major commodities.

Gross cash income on red meat farms should be fairly flat in 1996. Red meat farms earn little of their gross cash income from crop sales, just around 10 percent in recent years, so they will not benefit greatly from expected strong 1996 crop

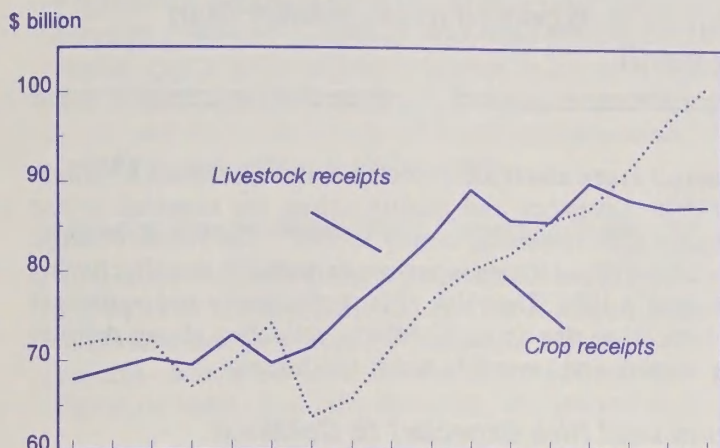
receipts. On the other hand, because they do not depend on crops, expected lower government payments will not affect them much either. During the 1990's, just about 4 percent of their gross cash income came from government payments.

While gross cash income could remain flat on red meat farms, cash expense could increase. Feed expense makes up about 20 percent of cash expenses on these farms, so they could be vulnerable to higher feed grain prices. Some cattle producers are attempting to mitigate the impact of higher feed grain prices by increasing their use of pasture.

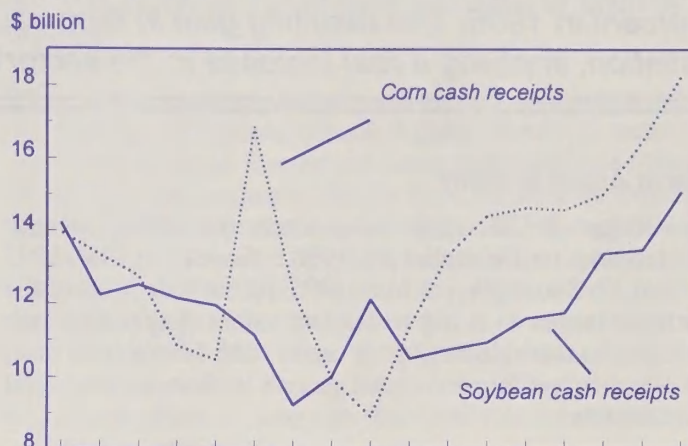


## ERS forecasts that in 1996...

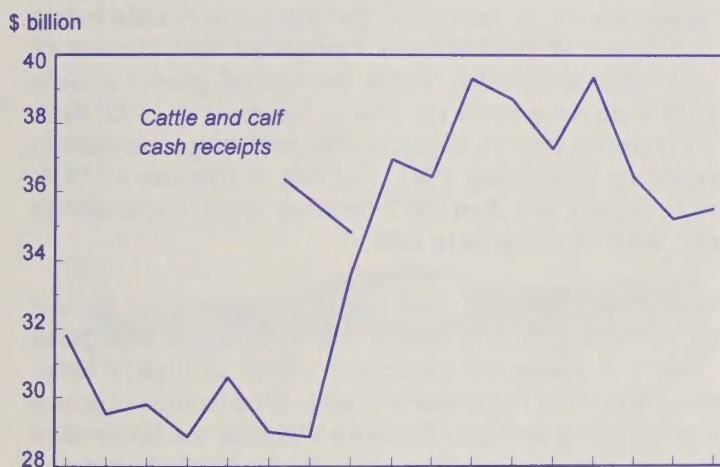
**Figure 1 -- Crop receipts may increase while livestock receipts are similar to 1995**



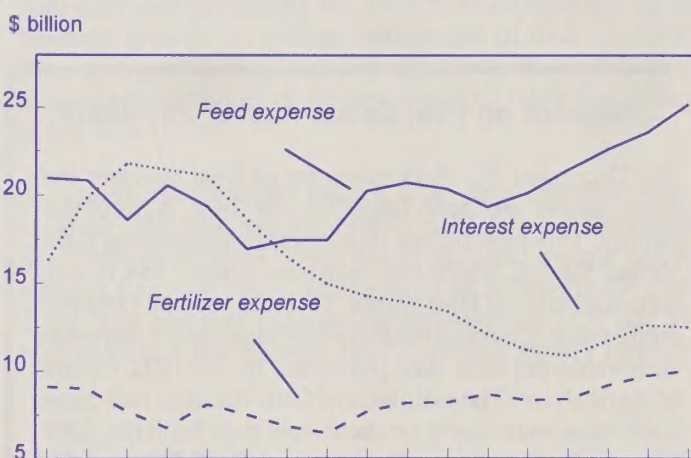
**Figure 2 -- Tight stocks could bolster corn and soybean prices**



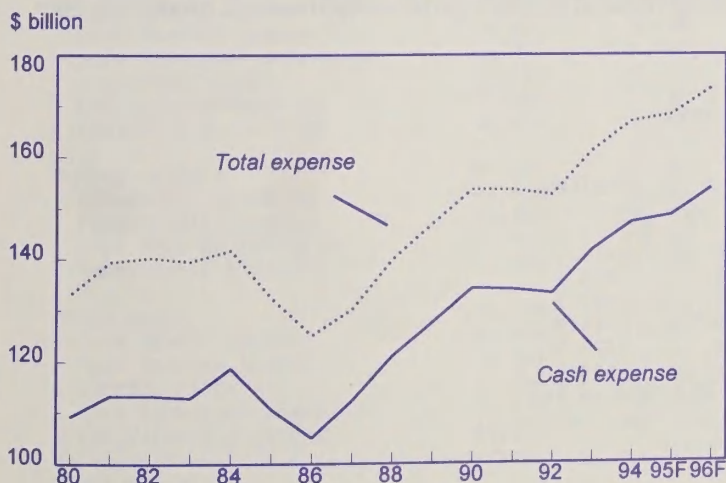
**Figure 3 -- Demand may lag heavy beef production, keeping prices low**



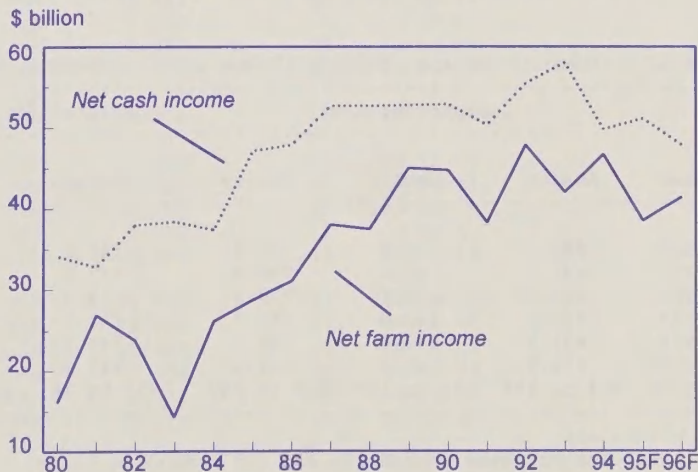
**Figure 4 -- Higher feed grain prices and large cattle inventories could mean higher feed expense**



**Figure 5 -- Overall expenses may increase**



**Figure 6 -- Net farm income may increase slightly while net cash income decreases slightly**





## Farm Assets, Debt, and Equity Up in 1996

*The farm sector's overall financial position remains strong. Farm real estate assets, which have grown at rates over 3 percent in 1993, 1994, and 1995, are forecast to increase by about 3.6 percent in 1996. Farm debt, while also increasing, is expected to rise only 2 percent in 1996. The resulting gain in farm sector equity is expected to be greater than inflation, implying a real increase in the sector's net worth.*

### Farm Asset Growth

The value of U.S. agricultural assets (excluding operator households) on December 31, 1996 is forecast at \$985-\$995 billion, up 3 to 4 percent from 1995. About four-fifths of the increase is due to rising real estate values. Expanding cash receipts, reasonable returns to assets, and favorable interest rates are supporting continued growth in farm sector capital investments.

Farm equity is expected to grow in 1996 as farm asset values rise more rapidly than farm debt. Real farm business equity (measured in 1987 dollars) is forecast to rise for the fifth consecutive year (see table 2).

### Comment on Real Estate Assets Revisions

The December 31, 1995 estimates of farm business real estate assets are now based on the June Agricultural Survey. This new survey replaces the Agricultural Land Values Survey, which has been used since 1984 to estimate agricultural land values. ERS has revised farm real estate value estimates for 1989-94 to realign the estimates with value-per-acre data published in the 1992 Census of Agriculture. The estimates of farm business real estate asset values are based on these new data from the ERS-Natural Resources and Environment Branch (see AREI Updates: Agricultural Land Values, December 1995).

Nonreal estate assets are expected to increase about \$7 billion in 1996. Livestock and poultry values are expected to rise slightly after remaining steady in 1995. The values of crops stored and of purchased inputs are expected to rise after having dropped in 1995. The value of farm machinery and equipment is forecast to rise about \$2 billion, reflecting strong demand for tractors and favorable credit conditions.

### Farm Debt Rise Expected To Continue Through 1996

By the end of 1996, farm business debt is anticipated to rise above \$154 billion, the highest level since 1986. The expected increase of \$3-\$4 billion during 1996 will mark the sixth year of rising debt in the last seven. The expansion in outstanding loan balances in 1996 follows a projected debt increase of over \$4 billion in 1995. While the rate of growth in debt slowed from 3.4 percent in 1994 to 3 percent in 1995, these years represent the two largest annual percentage increases in outstanding loans since 1981. The rate of increase in 1996, though slightly less than the 2 previous years, continues the recent trend of rising farm debt.

The recent rise in farm debt is a cause of concern but not alarm. A more favorable interest rate environment anticipated in 1996 will lessen the impacts of steady to slightly lower income levels and rising indebtedness. Total interest expenses are projected to decline slightly in 1996, as the lower rates offset the rise in debt. It appears that a larger number of operators will have less income available to meet principal and interest payments on their loans, but those payments will likely be lower for the average farm operator. Those experiencing reduced income, particularly livestock producers, may

Table 2--Nominal and real balance sheets show improvement 1/

Year	Current dollars			Deflated dollars (\$1987)		
	Assets	Debt	Equity	Assets	Debt	Equity
1990	838.8	138.0	700.8	740.3	121.8	618.5
1991	843.7	139.2	704.5	717.4	118.4	599.1
1992	868.4	139.1	729.4	718.3	115.1	603.3
1993	902.9	142.0	761.0	731.1	115.0	616.2
1994	933.5	146.8	786.7	740.3	116.4	623.9
1995F	956.6	151.0	805.9	745.6	118.1	628.1
1996F	985 to 995	153 to 157	830 to 840	751 to 761	116 to 120	632 to 642

F = forecast

1/ Excludes operator households and CCC commodity loans.

2/ Deflated by the GDP implicit price deflator, 1987=100.



experience difficulty in meeting their debt service requirements.

The use of debt provides a valuable source of capital that can lead to improved productivity and higher profits. The recent rise in loan balances can be at least partially attributed to farmers' positive view of the future of the sector, as evidenced by borrowing to finance strong machinery sales. The number of tractors purchased is forecast to increase 6 percent in 1995. Farmers appear to be willing to borrow to invest in replacement of their aging capital stock. Farmers' demand for machinery may rise even more in 1996, influenced by availability of credit at relatively low interest rates.

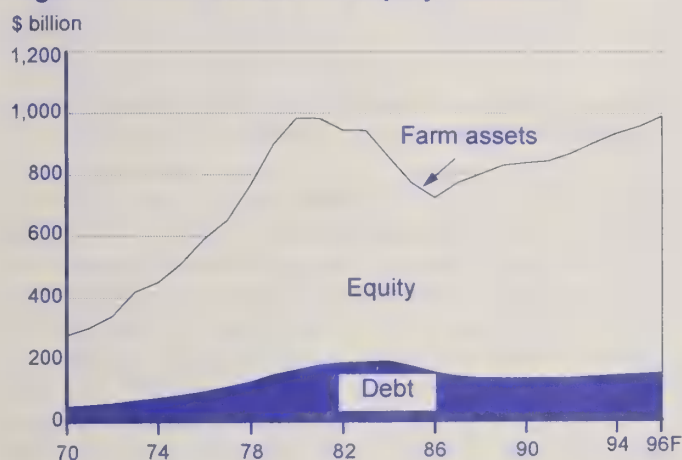
### Farmers' Use of Repayment Capacity Rises

Farmers are expected to use their available credit lines more fully in 1996 as they likely did in 1995. Lenders generally require that no more than 80 percent of a loan applicant's available income be used for repayment of principal and interest on loans. For farm operators, this income available

for debt service (measured as net cash income plus interest) can be used to determine the maximum amount of loan payment the farmer could make. Given current market interest rates and an established repayment period, the maximum feasible debt that the farmer could carry with this loan payment can be determined. Using current bank interest rates and a 7-year repayment period, maximum feasible debt conceptually measures the line of credit that could be available to farmers.

Farm debt repayment capacity use (actual debt expressed as a percentage of maximum feasible debt) effectively measures the extent to which farmers are using their available lines of credit. This ratio indicates that, in 1996, farmers are expected to use over 60 percent of the debt that could be supported by their current incomes. Use of debt repayment capacity is up from 46 percent in 1993, 54 percent in 1994, and 57 percent in 1995. Despite the favorable effects of expected lower interest rates in 1996, use of debt repayment capacity is expected to reach its highest level since 1986, driven by the combined effects of lower income available for debt service and higher debt levels.

Figure 7-- Farm assets and equity increase



### Debt Growth Rate Accelerates

The recent increases are relatively small compared with annual debt changes during the 1970's, when outstanding loan balances grew at an average annual rate of over 12 percent. The rapid growth in use of debt financing during that period is an often cited cause of the farm financial crisis that emerged in the mid-1980's.

Expanded use of credit caused total farm business debt to increase from less than \$50 billion in 1970 to a high of almost \$194 billion in 1984. Debt levels declined during the subsequent financial crisis, falling to \$137 billion by the end of 1989. Year end loan balances ranged between \$137 and \$139 billion from 1989 through 1992, trending slowly upward at

Table 3--Farm debt, December 31, selected years, 1984-96F

Lender	1984	1988	1992	1994	1995F	1996F
-----Million dollars-----						
Real estate	106,697	77,496	75,421	77,642	79	79 to 83
Farm Credit System	46,596	28,322	25,408	24,583	24	23 to 26
Farm Service Agency 1/	9,523	8,940	6,394	5,463	5	4 to 6
Life insurance companies	11,891	9,002	8,765	9,023	9	8 to 11
Commercial banks	9,626	14,371	18,757	21,070	22	23 to 25
CCC storage facility	623	21	2	*	*	*
Individuals & others	28,438	16,841	16,095	17,503	18	18 to 20
Nonreal estate	87,091	61,734	63,631	69,120	72	72 to 76
Commercial banks	37,619	28,309	32,912	36,730	38	37 to 41
Farm Credit System	18,092	8,766	10,346	11,180	13	12 to 14
Farm Service Agency 1/	13,740	12,899	7,143	6,020	5	4 to 6
Individuals & others	17,640	11,760	13,230	15,190	16	17 to 19
Total debt	193,788	139,230	139,052	146,762	151	153 to 157
Farm Credit System	64,688	37,088	35,753	35,763	37	36 to 40
Farm Service Agency 1/	23,263	21,839	13,538	11,482	10	9 to 11
Commercial banks	47,245	42,679	51,669	57,800	60	61 to 64
Life insurance companies	11,891	9,002	8,765	9,023	9	8 to 11
Individuals & others	46,701	28,622	29,325	32,693	34	35 to 37

F = Forecast

\* = Less than \$500,000

1/ Formerly Farmers Home Administration.



an average annual rate of less than 1 percent. Farmers appear to have used relatively high incomes generated during 1989-92 to minimize borrowing and improve their balance sheets.

The debt growth rate has accelerated since 1992, rising to about 2 percent in 1993. The rate of increase rose to 3.4 percent in 1994, and, based on preliminary projections, moderated to about 3 percent in 1995. Debt levels at year end 1996 are expected to stand about \$15 billion above those of 1992.

### **Banks Show Rapid Growth in Farm Loans**

Farm debt held by banks is expected to increase almost 4 percent in 1996, following annual increases of about 6 percent in both 1994 and 1995. Bank loans secured by farmland increased by over 6 percent in 1995, while nonreal estate farm loan balances rose about 2 percent. Bank farm loans outstanding have grown at an average annual rate of about 5 percent during 1988-95.

Agricultural banks enter 1996 well capitalized and report ample funds to meet the credit needs of qualified borrowers. However, at mid year 1995, agricultural banks reported an average loan-to-deposit ratio of 0.65. This measure, up from 0.55 during 1990-92, has reached its highest level since the early 1980's. The rising loan balances and high loan-to-deposit ratios in some Midwestern banks have been offered as evidence of a likely tightening of credit in the near future, but these factors also indicate the recent strength of both farmers' loan demand and bankers' willingness to provide credit. Further increases in the loan-to-deposit ratios might lead to reduced farm credit availability, as some banks reserve their more restricted supply of loanable funds for their most credit-worthy borrowers.

While banks reported lower delinquency and charge-off rates at mid year 1995, bank officers responding to surveys conducted by various Federal Reserve Banks indicate that problems might be building in the cattle producing areas served by the Minneapolis, Kansas City, and Dallas Federal Reserve Districts. Bankers in these areas report lower loan repayment rates and higher numbers of renewals and extensions. These bankers also report that both demand for loans and fund availability are generally strong. These factors, together with

current projections for relatively low net income, suggest that some farmers may experience repayment difficulties in 1996.

### **Farm Credit System Nonreal Estate Loans Rise**

Farm business debt owed to the Farm Credit System (FCS) is forecast to increase about 1 percent in 1996, following a rise of more than 4 percent in 1995. Preliminary projections indicate that FCS nonreal estate loans will increase over 15 percent in 1995, off setting an expected 1-percent decline in farm mortgage loans. Despite their relatively slow growth in loan volume in recent years, FCS institutions have streamlined through mergers and have profited from improved net interest margins. They are well positioned to be competitive in the farm credit market in the future.

### **Falling Interest Rates To Affect Farmers**

The interest rate changes anticipated to be engineered by the Federal Reserve Board in 1996, could generally lower all current market interest rates, but are not expected to produce a simultaneous proportional drop in farm interest expenses.

Total farm business debt is expected to exceed \$150 billion by the end of 1995. Theoretically, a 100-basis-point decrease in market interest rates would suggest that interest expenses could fall about \$1.5 billion, increasing net farm income by that amount. However, the actual decrease in farm business interest expenses is expected to be substantially less.

Changes in current market interest rates are not reflected immediately in farm interest expenses due to a variety of factors. First, interest rates on new agricultural loans do not respond instantaneously to changes in general market interest rates. ERS research suggests that changes in the 3-month T-bill rate produce changes in commercial bank interest rates on new farm loans, but the change is less than proportional and occurs with a lag of about one quarter. Interest rate changes following a change of 100 basis points in the 3-month T-bill rate were about 71 basis points on new farm nonreal estate loans, and about 66 basis points on new farm real estate loans.

Additionally, these farm interest rate responses to market rate changes refer to rates on new loans. Interest expenses are based on average interest rates on all loans outstanding, rather than rates on new loans only. While over 75 percent of all bank loans are made on variable interest rates, such loans can only periodically be adjusted to reflect new market rates. There is a lag between the date of the rate change for new loans and the adjustment date of the variable rate loan.

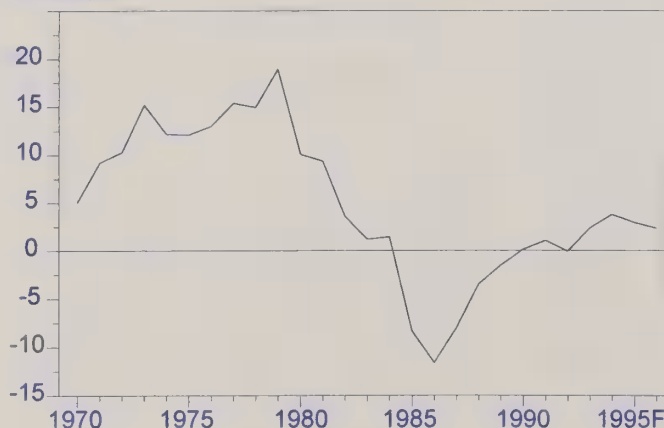
Finally, total interest expense also depends on the level of debt outstanding. While the current projection is for rising debt balances through 1995, the decrease in interest expenses could be understated if farmers respond to lower market interest rates by increasing their demand for new loans.

### **Farm Sector Financial Performance Measures**

Rising farm sector asset values and modest changes in farm income could result in somewhat lower returns to total farm assets and equity in 1996. Forecast rates of return on farm assets and equity from current income in 1996 are expected

**Figure 8 -- Farm debt growth continues**

% change





to be slightly higher than in 1995. In contrast, total returns to farm assets, including returns from real capital gains, are forecast to be between 1 and 2 percent, compared with 3 percent in 1995. This is primarily because farm asset values in 1996 are expected to rise less than in 1995, with slightly greater inflation expected in 1996 than in 1995.

The debt servicing ratio (a measure of liquidity) is the proportion of gross cash income needed to service debt. From 1990 through 1995, principal and interest payments required between 14 and 15 percent of the sector's gross cash income,

a level expected to continue into 1996. Compare that to 1983, when principal and interest payments took 28 percent of gross cash income.

Net cash farm income to debt reflects the strain placed on cash flow to retire farm debt. The lower the value, the greater the stress placed on farm earnings remaining after all payments necessary to retire farm debt on schedule have been made. The lower forecast value for net cash farm income to debt in 1996 suggests that, for the farm sector overall, financial efficiency will decline slightly.

Table 4--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital gains	Total	Income	Real capital gains	Total
	Percent					
1992	4.1	0.4	4.5	3.4	1.0	4.4
1993	2.9	2.3	5.3	2.1	3.1	5.3
1994	3.6	1.3	4.9	2.9	1.9	4.8
1995F	2.2	0.8	3.0	1.1	1.3	2.3
1996F	2 to 3	0 to -1	1 to 2	1 to 2	0 to -1	1 to 2

F = forecast

1/ Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous year's assets and equity, respectively.

Table 5--Liquidity and financial efficiency, 1990-1996F

	Debt servicing ratio	Net cash farm income to debt
	(liquidity)	(financial efficiency)
	Ratio	Percent
1990	.15	47.7
1991	.15	44.7
1992	.14	47.5
1993	.14	48.7
1994	.14	42.2
1995F	.15	42.8
1996F	.14 to .16	38 to 42

F = forecast



## Only Slight Rise Forecast for 1996 Crop Production Costs

*The largest input price increase, around 4-5 percent, could be for trucks and autos.*

Based on USDA's most current forecasts, 1996 costs of production for major U.S. crops are forecast up 1-2 percent. Cotton is the exception, as an expected 15-percent yield increase is expected to cause ginning costs to rise about 17 percent. Cotton production costs are forecast up 3-4 percent for 1996. For the most part, these increases compare favorably with the general economy where consumer prices, as measured by the CPI, are forecast up an average 3 percent.

The overall Prices Paid Index for farm production items (crop and livestock inputs) is forecast up 3.1 percent. However, this average is heavily influenced by a 9-percent increase in feed costs, which have no effect on crop production. Among crop inputs, prices for autos and trucks could rise the most (4-5 percent). Fuel prices could also rise considerably (3-4 percent). In 1995 fuel prices fell from the recent years' average

and a return to this earlier average could be affecting the 1996 forecast.

Prices for some inputs are forecast down slightly for next year. Agricultural chemicals, farm supplies, and interest are three inputs that could cost less.

For growers' bottom-line finances, the crop grown, and therefore the input mix, will be the determinant. For those crops that require more mechanization, like rice and cotton, the higher fuel and other machinery operating expenses will have a negative impact. For these same farmers, however, lower chemical costs will be somewhat offsetting. Also, even though most inputs will cost more in 1996, the increase will likely be less than in 1995.

**Figure 9 -- Prices for major agricultural inputs**

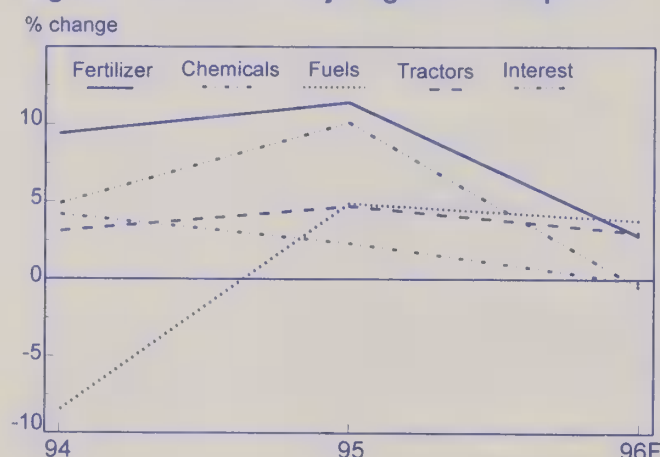




Table 6--U.S. production costs for major field crops, 1995-96 1/

Item	Corn		Sorghum		Oats		Barley		Wheat		Rice		Soybean		Cotton	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Dollars per planted acre																
Cash expenses:																
Seed	22.57	23.56	6.40	6.68	8.68	9.06	6.93	7.23	6.98	7.28	28.02	29.24	13.78	14.38	14.73	15.37
Fertilizer	48.17	48.86	21.20	21.51	13.68	13.87	17.32	17.57	15.90	16.13	47.80	48.48	9.67	9.81	39.90	40.47
Chemicals	25.43	25.43	14.38	14.38	1.23	1.23	8.75	8.75	6.23	6.23	58.82	58.82	24.66	24.66	50.29	50.29
Custom operations 2/	10.23	10.43	4.54	4.63	7.05	7.19	4.35	4.43	4.96	5.06	46.56	47.49	3.80	3.87	19.94	20.34
Fuel, lube, and electricity	19.41	19.94	13.64	14.01	7.04	7.24	11.70	12.02	8.31	8.54	64.00	65.74	8.12	8.34	31.77	32.63
Repairs	16.57	16.84	13.51	13.73	8.68	8.82	13.66	13.88	7.76	7.88	28.86	29.32	10.79	10.96	26.37	26.79
Hired labor	7.59	7.68	8.17	8.27	4.79	4.85	4.78	4.84	5.45	5.51	33.55	33.96	6.06	6.13	39.73	40.22
Drying or ginning	na	na	na	na	na	na	na	na	na	na	28.91	30.09	na	na	45.89	53.83
Other variable cash expenses	.45	.45	.42	.43	.00	.00	1.75	1.79	.23	.24	11.28	11.50	.04	.04	5.73	5.84
Total, variable cash expenses	150.42	153.19	82.26	83.63	51.16	52.26	69.25	70.52	55.82	56.87	347.80	354.65	76.91	78.19	274.35	285.78
General farm overhead	13.72	13.99	8.44	8.61	4.90	5.00	6.71	6.85	6.50	6.63	28.84	29.41	11.22	11.44	17.34	17.68
Taxes and insurance	21.34	21.72	13.22	13.45	18.23	18.56	12.42	12.65	11.08	11.28	29.94	30.48	19.28	19.63	23.06	23.47
Interest	16.95	16.86	11.00	10.93	3.89	3.87	10.25	10.19	8.25	8.21	25.17	24.98	14.05	13.97	18.94	18.81
Total, fixed cash expenses	52.00	52.57	32.66	33.00	27.02	27.42	29.38	29.68	25.83	26.11	83.95	84.87	44.55	45.04	59.34	59.97
Total, cash expenses	202.42	205.76	114.92	116.63	78.18	79.69	98.63	100.20	81.64	82.98	431.75	439.53	121.46	123.23	333.68	345.75
-----																
Economic (full ownership) costs:																
Variable cash expenses	150.42	153.19	82.26	83.63	51.16	52.26	69.25	70.52	55.82	56.87	347.80	354.65	76.91	78.19	274.35	285.78
General farm overhead	13.72	13.99	8.44	8.61	4.90	5.00	6.71	6.85	6.50	6.63	28.84	29.41	11.22	11.44	17.34	17.68
Taxes and insurance	21.34	21.72	13.22	13.45	18.23	18.56	12.42	12.65	11.08	11.28	29.94	30.48	19.28	19.63	23.06	23.47
Capital replacement	33.86	34.40	28.74	29.20	28.17	28.62	27.88	28.33	11.68	11.87	59.60	60.56	23.41	23.79	50.55	51.36
Operating capital	4.44	4.07	2.42	2.22	.95	.87	2.05	1.88	1.64	1.51	10.27	9.42	2.26	2.07	8.09	7.59
Other nonland capital	13.68	13.88	15.05	15.27	9.42	9.56	14.80	15.02	14.61	14.82	21.71	22.03	13.74	13.94	18.14	18.40
Land	71.99	71.43	29.93	30.39	27.92	27.90	39.32	38.57	56.32	52.60	96.94	92.79	58.46	57.58	47.58	48.66
Unpaid labor	24.19	24.49	18.76	18.99	16.83	17.04	6.41	6.49	9.67	9.79	25.24	25.55	18.90	19.14	27.32	27.66
Total, economic costs	333.64	337.17	198.83	201.77	157.58	159.81	178.85	180.29	167.33	165.36	620.34	624.90	224.19	225.78	466.43	480.61

na = Not applicable. 1/ USDA forecasts excluding direct effects of government programs. 2/ Includes custom drying for corn.







tively stable low cost-of-capital environment conducive to business investment. However, some slowdown in nonresidential business investment from the extremely high levels of 1994 and 1995 is expected.

In 1995, long-term interest rates fell sharply while stock prices surged. From January to June, interest rates on long term high grade bonds fell roughly 130 basis points. Since late June to mid-December, long term bond rates have fallen roughly an additional 60 basis points. Through mid-December, the value of the Standard and Poor 500 increased roughly 35 percent from the beginning of the year. Low long-term interest rates and strong stock values reduce the overall cost and increase the availability of funds for capital investment by business firms. Specifically, rising equity prices increase the overall market value of business equity and thus improve the ability of business firms to obtain funds through the issuance of debt. The decline of long-term interest rates and surging equity prices also boost consumer spending by generating greater household wealth and confidence.

Economic growth in 1996 is expected to benefit from an improvement in the U.S. trade balance. For most of 1995, the trade deficit in terms of net exports of goods and services continued to deteriorate. The deterioration in the U.S. net exports position occurred for two primary reasons. First, U.S. economic growth was more rapid than that of most of the rest of the world. Second, import demand in the United States is more sensitive to changes in domestic income growth than is foreign demand for U.S. exports to changes in foreign income growth. In 1996, economic growth outside of the United States is expected to increase significantly. Among our major trading partners, stronger growth is most notably expected in Mexico and Japan.

U.S. trade is expected to also benefit from a strongly competitive dollar. In the last 2 years, the real trade-weighted value of the dollar has fallen by approximately 10 percent. A number of years are required for real exports and imports to fully

respond to a change in the real value of the dollar. Therefore, the U.S. trade position in 1996 should benefit from the overall trend of a weaker dollar over the last 2 years.

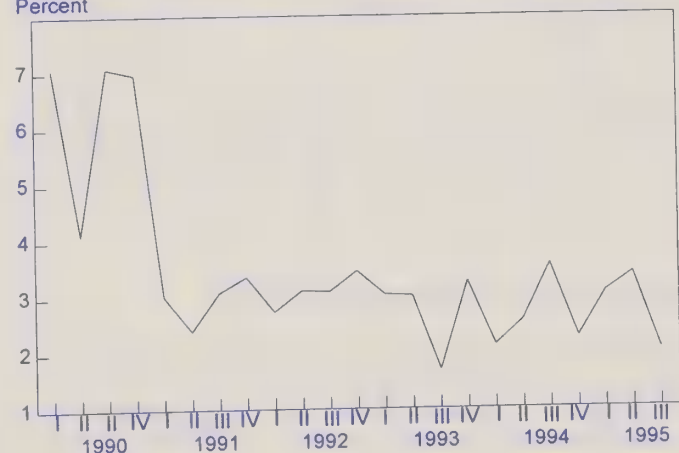
Consumer real wages and incomes are likely to gradually improve in 1996 as greater pressure on wages is generated from the strong productivity and corporate profitability gains of 1995. Moreover, the unemployment rate remains low relative to historical standards, thus putting some additional pressure on real wages.

Inflation is expected to remain low in 1996, thus improving the growth outlook. Strong continued productivity gains, moderate increases in overall hourly compensation, and strong global competition have kept increases in unit labor costs modest and the inflation outlook low. By the end of 1995, capacity utilization in manufacturing had fallen to levels consistent with only slight inflationary pressures. Continued low inflation promotes economic growth by reducing pressures on real interest rates and reducing economic uncertainty and distortions.

### ***Implications for Agriculture and Rural America***

The macroeconomic outlook is a highly favorable one for agriculture and rural America. Agriculture should benefit from moderate growth in the domestic economy and stronger growth in foreign demand resulting from stronger foreign growth, especially in Mexico and Japan. Continuing highly competitive real exchange rates should enhance agricultural and rural exports. Highly competitive real exchange rates are especially beneficial to U.S. firms trying to enter foreign markets. Lower real interest rates should benefit rural America by reducing real borrowing costs and enhancing credit availability. Demand for capital equipment and expensive consumer durables produced in rural America should benefit from a lower real interest rate environment. Production expenses should be held down by a continuation of low inflation and stable energy prices.

**Figure 11 -- Inflation (CPI-U) remained low in 1995**  
Percent



# Financial Performance of U.S. Farm Businesses, 1991-1994

by Mitchell Morehart and Janet Perry

**Abstract:** FCRS data reveal that for the average commercial farm business an increase in revenue from crop sales in 1994 was not enough to offset declines in livestock receipts and government payments. For these farms, variable and fixed cash expenses declined from previous years with livestock purchases, feed, repairs and maintenance, and utilities contributing most to the reduction in variable expenses. Interest expenses, insurance, and rent and lease payments contributed to the reduction in fixed expenses. Lower average cash expenses offset the decline in gross cash income, leading to an average net farm income on commercial farms of \$32,284 in 1994. Farms in a financially vulnerable position remained at about 5 percent.

**Keywords:** Commercial farms, farm financial position, net farm income, farm income statement, farm balance sheet

Even though 1994 saw none of the adverse weather that decreased production the year before, total gross cash income from farming for the average commercial farm business was actually less than in 1993. Commercial farms have gross sales over \$50,000 and comprise about 27 percent of farms. An increase in revenue from crop sales was not enough to offset declines in average livestock receipts and government payments. Net farm income of commercial-size farms rose from an average of \$37,997 per farm in 1993 to an average of \$38,284 in 1994.

While the year-to-year variation in average income was not statistically significant, the composition of net income did change (table 7). The decrease in 1994 government payments per farm of about \$5,600 was statistically significant. Both variable and fixed cash expenses declined from previous years. Reductions in livestock purchases, feed, repairs and maintenance, and utilities contributed most to the reduction in variable expenses. Interest expenses, insurance, and rent and lease payments contributed to the reduction in fixed expenses. The reduction in cash expenses in 1994 offset the decline in gross cash income and was enough to lead to an increase in net cash income of almost \$790 per farm. The additional value of inventories held by farm businesses at the end of 1994 offset most of the increase in depreciation expenses, leaving net farm income per farm up by less than 1 percent.

## Income Varies on Commercial Farms

Considerable variation exists in the mean (average) and median levels of net farm income by type of commodity grown, location of farm, and size of farm. Except for operations that specialized in wheat, rice, and tobacco, average income levels increased from 1993 for most crop farms in 1994. The most dramatic income increases were for cotton, peanuts, corn, and soybean operations. These farms were those most adversely affected by drought or flood in 1993.

Not only did average and median incomes increase for corn, soybean, cotton, peanut, and nursery and greenhouse opera-

tions, but the whole distribution of income shifted to a higher level in 1994. For each of these farm types, the income levels separating the middle 50 percent of farms from the lowest or highest 25 percent of farms increased by several thousand dollars from 1993. The cutoff for corn farms for the lowest 25 percent of farms increased from -\$560 in 1993 to \$10,223 in 1994. Rice and vegetable farms had the largest reduction in average income levels among crop farms, although for vegetable farms the median level of income remained steady.

Among livestock operations, beef, hog, and general livestock farms had lower income levels per farm in 1994 than in the previous year. Only poultry operations showed an increase. Both the mean and median income was fairly stable for dairy farms.

Within regions, the largest increase in average income level among commercial farms occurred in the Lake States, Southeast, and Delta regions. The largest reduction was in the Southern Plains and Pacific regions.

## Assets and Liabilities of Commercial Farms

The composition of assets held and debt owed by farmers differs from the average U.S. household. The average net worth for U.S. households in 1993 was \$99,772. Farmers, on the other hand, look much wealthier because statistics refer to farm business assets and debt rather than to personal wealth. Those assets are used to produce an income, but most households rely on human capital, only, to produce income for the family. Moreover, in terms of gross sales, many farmers tend to operate small businesses.

Asset value per commercial farm was \$766,045 in 1994, of which 60 percent was the value of land (table 8). Farm liabilities of commercial farms averaged \$138,279, down \$6,000 from 1993. Current liabilities represented 35 percent of total liabilities and included operating loans and other debt obligations which cover a 1-year period. Noncurrent liabilities—principal and interest due on notes for land, equipment, and machinery purchases—remained relatively stable, al-



Table 7--Farm business income statement for commercial size farms, 1991-1994

	1991 Dollars	Share of gross Percent	1992 Dollars	Share of gross Percent	1993 Dollars	Share of gross Percent	1994 Dollars	Share of gross Percent
Gross cash income	199,022	100.0	199,418	100.0	226,096	100.0	222,701	100.0
Livestock sales	82,565	41.5	86,565	43.4	97,908	43.3	90,562	40.7
Crop sales (incl. net CCC loans)	92,167	46.3	89,223	44.7	92,192	40.8	102,520	46.0
Government payments	8,527	4.3	8,849	4.4	14,464	6.4	8,879	4.0
Other farm-related income	15,762	7.9	14,781	7.4	21,532	9.5	20,740	9.3
Cash expenses	155,476	78.1	150,041	75.2	179,848	79.5	175,667	78.9
Variable expenses	123,545	62.1	119,215	59.8	144,910	64.1	141,532	63.6
Livestock purchases	13,768	6.9	12,510	6.3	19,007	8.4	13,723	6.2
Feed	20,046	10.1	20,771	10.4	25,947	11.5	25,645	11.5
Other livestock related	3,204	1.6	3,982	2.0	4,487	2.0	4,992	2.2
Seed and plants	7,129	3.6	6,870	3.4	7,823	3.5	8,279	3.7
Fertilizer and chemicals	20,715	10.4	20,616	10.3	22,409	9.9	23,790	10.7
Labor	21,978	11.0	19,829	9.9	25,365	11.2	23,627	10.6
Fuels and oils	7,762	3.9	7,491	3.8	7,979	3.5	7,889	3.5
Repairs and maintenance	10,890	5.5	10,739	5.4	12,673	5.6	11,880	5.3
Machine-hire and custom work	4,251	2.1	5,061	2.5	5,653	2.5	6,404	2.9
Utilities	5,838	2.9	5,080	2.5	6,072	2.7	5,882	2.6
Other variable expenses	7,963	4.0	6,267	3.1	7,495	3.3	9,421	4.2
Fixed expenses	31,931	16.0	30,825	15.5	34,938	15.5	34,135	15.3
Real estate and property taxes	3,423	1.7	3,673	1.8	3,777	1.7	3,923	1.8
Interest	13,295	6.7	11,879	6.0	12,403	5.5	11,883	5.3
Insurance premiums	4,431	2.2	4,241	2.1	4,827	2.1	5,118	2.3
Rent and lease payments	10,782	5.4	11,032	5.5	13,931	6.2	13,212	5.9
Net cash farm income	43,546	21.9	49,377	24.8	46,248	20.5	47,034	21.1
Non-cash income	10,222	5.1	11,925	6.0	10,876	4.8	11,704	5.3
Value of inventory change	5,709	2.9	7,428	3.7	6,281	2.8	7,218	3.2
Nonmoney income	4,513	2.3	4,497	2.3	4,595	2.0	4,486	2.0
Non-cash expenses	16,299	8.2	16,701	8.4	19,128	8.5	20,454	9.2
Depreciation	15,501	7.8	15,916	8.0	18,441	8.2	19,820	8.9
Labor, non-cash benefits	798	0.4	785	0.4	687	0.3	633	0.3
Net farm income	37,469	18.8	44,601	22.4	37,997	16.8	38,284	17.2

Source: Farm Costs and Returns Survey

Table 8--Farm business balance sheet for commercial size farms, 1991-1994

	1991 Dollars	Share of assets Percent	1992 Dollars	Share of assets Percent	1993 Dollars	Share of assets Percent	1994 Dollars	Share of assets Percent
Farm assets	746,940	100.0	753,187	100.0	783,817	100.0	766,045	100.0
Current assets	131,322	17.6	132,497	17.6	126,434	16.1	137,442	17.9
Livestock inventory	30,054	4.0	29,900	4.0	30,001	3.8	28,850	3.8
Crop inventory	33,609	4.5	30,680	4.1	34,324	4.4	36,291	4.7
Purchased inputs	4,159	0.6	5,832	0.8	6,450	0.8	7,891	1.0
Cash invest in growing crops	na	0.0	4,579	0.6	4,093	0.5	5,290	0.7
Prepaid insurance	1,108	0.1	1,060	0.1	1,207	0.2	1,279	0.2
Other assets	622,392	83.3	60,445	8.0	50,359	6.4	57,84	7.6
Non-current assets	615,617	82.4	620,690	82.4	657,384	83.9	628,603	82.1
Investment in cooperatives	3,751	0.5	4,184	0.6	4,402	0.6	5,539	0.7
Land and buildings	467,393	62.6	457,338	60.7	490,675	62.6	452,372	59.1
Farm equipment	106,787	14.3	112,786	15.0	119,147	15.2	124,698	16.3
Breeding animals	37,687	0.5	46,383	6.2	43,160	5.5	45,993	6.0
Farm liabilities	126,039	1.7	113,992	15.1	144,413	18.4	138,279	18.1
Current liabilities	47,311	0.6	40,593	5.4	53,140	6.8	48,138	6.3
Notes payable within one year	29,833	0.4	23,717	3.1	32,497	4.1	26,398	3.4
Current portion of term debt	9,918	0.1	9,496	1.3	11,666	1.5	13,060	1.7
Accrued interest	3,554	0.0	3,198	0.4	4,063	0.5	3,888	0.5
Accounts payable	4,006	0.1	4,181	0.6	4,915	0.6	4,791	0.6
Non-current liabilities	78,728	1.1	73,399	9.7	91,272	11.6	90,141	11.8
Nonreal estate	14,158	0.2	14,226	1.9	17,105	2.2	23,222	3.0
Real estate	64,570	0.9	59,173	7.9	74,168	9.5	66,919	8.7
Farm equity	620,901	0.8	639,196	84.9	639,404	81.6	627,766	81.9
Debt/asset ratio	0.17		0.15		0.18		0.18	

Source: Farm Costs and Returns Survey



though machinery and equipment averaged \$17,105 in 1994, compared with \$23,220 the year before.

Average debt-to-asset ratios remained stable at 0.18 between 1993 and 1994, although data for both years were well above the levels reported by farmers in 1992. Commercial farms reported a higher level of current assets, meaning those assets readily converted to cash within 1 year, and fewer current liabilities in 1994 than in 1993.

Among commercial-sized crop farms, wheat, corn, rice, and cotton operations reported data yielding a higher debt-to-asset position in 1994. Hog, dairy, and general livestock operations also reported an increase in debt relative to assets. Farms with higher debt-to-asset positions were more concentrated in the Northern Plains and the Southwest.

### Farms in Financial Difficulty

The overall financial performance of farm businesses can be evaluated by considering their combined net income and solvency positions. Both the debt-to-asset ratio (a measure of business solvency) and net farm income (a measure of business profitability) have limitations when considered independently. A high debt-to-asset ratio may be acceptable if a farm generates earnings that are sufficient to service debt and meet other financial obligations. Operating at a loss may not pose major short-term difficulties if the operation can borrow against assets or use other sources of income outside the farm business.

The Economic Research Service measures the overall financial performance of farms by combining a farm's net farm income and solvency position. Farms in a vulnerable financial position have debts in excess of 40 percent of the value of their assets and negative net farm income. Farms in a favorable financial position have debts of less than 40 percent of the value of their assets and positive net farm income. Marginal solvency refers to positive income, high-debt farms, while marginal income refers to negative income, low-debt farms.

Each year a segment of farms experiences severe financial circumstances, but the size of that segment has been steadily declining during the past few years. On January 1, 1995, 6 percent of commercial farm businesses were in a vulnerable financial position based on their combined net farm income

and debt-to-asset ratios. The percentage of vulnerable farms was down only slightly from 6.4 percent a year earlier because a larger share of farms had positive net farm incomes in 1994.

A higher percentage of farms in a vulnerable position were organized as individual operations and fewer were organized as either partnerships or family corporations than the population of all commercial farms, or farms in a favorable financial position. Farms in a vulnerable position, on average, had a third more cash-rented acres, and fewer owned or share-rented acres than all commercial farms.

Although the geographic composition of vulnerable farms generally mirrors the distribution of commercial farms across the various production regions, there has been substantial variation from year to year. In 1994, 9 percent of vulnerable commercial farms were located in the Lake States, that region's lowest percentage since 1989. In contrast, the Corn Belt represented 30 percent of vulnerable businesses, the highest contribution since 1988. The makeup of vulnerable operations also varied by economic size. Farms with gross sales of \$100,000 to \$249,999 accounted for 47 percent of vulnerable operations in 1994. A year earlier only 35 percent of vulnerable farms were from this sales class.

Available data suggest that commercial farm businesses that experienced cash flow difficulties and exhausted their debt repayment capacity are largely located in the western Corn Belt and eastern Plains. Fewer difficulties with debt repayment capacity in the eastern half of the United States likely reflect a lower leverage position and a greater incidence of off-farm work and part-time farming.

### Financial Pressure Mounts for Some Beef and Hog Producers

The largest financial impacts from the recent period of depressed cattle and hog prices have fallen on those commercial businesses that depend most on cattle and hogs as a source of farm income. In 1994, there were nearly 115,000 commercial-size farms that earned at least half of their gross income from beef and hog production. The combination of negative net farm income and relatively high debt-to-asset ratios left 7 percent of these businesses in a vulnerable financial position at the end of 1994. When compared with other production specialties, this group had one of the highest percentages of

Figure 12 – Farms financial performance, 1991-94

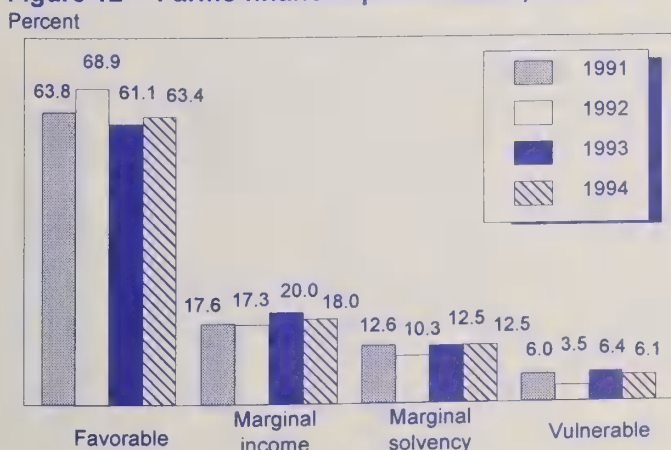
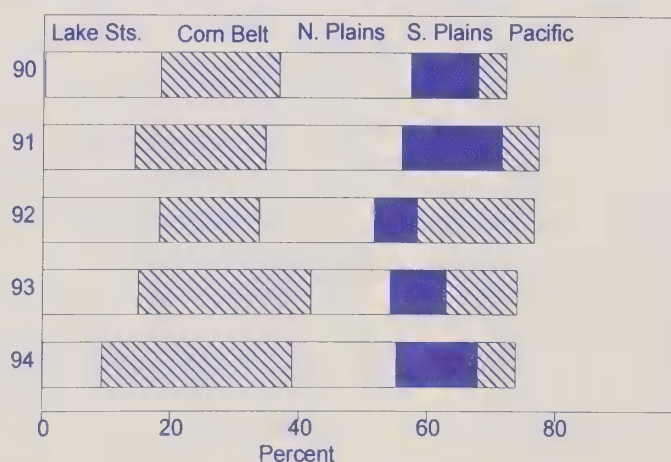


Figure 13 – Vulnerable farms by region, 1990-94





vulnerable businesses. Not only did this group contain a disproportionate percentage of vulnerable operations, but it also had the lowest share of farms considered financially favorable. Preliminary evidence for 1995 suggests some modest gains in prices for these commodities, although rising grain prices could reduce earnings for those operations that purchased rather than grew most of their feed.

### **How Serious is the Problem?**

Beef and hog producers in a vulnerable financial position at the end of 1994 had average gross farm income of about \$287,000. When compared with the gross income of farms in the other financial categories, these operations tended to be, on average, larger. Total expenses averaged just more than \$340,000, leaving a cash shortfall of \$53,484. Fixed cash expenses for items such as interest (\$29,323), rent and lease payments (\$14,376), and taxes and insurance (\$7,806), averaged more than \$51,000. In other words, 18 percent of gross cash income went to pay for fixed expenses that were 5 percentage points higher than for commercial farms that earned a profit during 1994. To be considered financially vulnerable, operations must have a debt-to-asset ratio of 0.40 or higher at the end of the year. Vulnerable beef and hog businesses had an average debt-to-asset ratio of 0.63. Farm assets averaged about \$595,000, while farm liabilities averaged \$373,500.

Most farms can rebound from intermittent periods of cash shortages, but successive years of operating at a loss and increasing leverage lead to serious restructuring issues. One signal of the pending seriousness for these vulnerable businesses is the stock of working capital. Working capital represents the difference between current (or liquid) assets and current liabilities. Working capital provides a buffer against further borrowing when faced with cash shortages.

Vulnerable beef and hog producers had an average working capital deficit of about \$24,000 at the end of 1994. However, not all of these businesses experienced liquidity problems. Nearly 30 percent had positive working capital that averaged more than \$100,000. These operations clearly have a cushion to sustain their business operations. Without alternative income sources, the combination of business losses, high debt, and working capital deficits experienced by 70 percent of vulnerable beef and hog producers leads to a serious erosion of farm equity and farm restructuring.

### **Can Off-farm Income Help the Most Financially Stressed Businesses?**

Even families operating commercial-sized farms earn off-farm income, mostly from wages and salaries from off-farm employment. On average, households of financially stressed commercial-sized beef or hog farms earned just over \$27,000 in off-farm income. This additional income softens the impact of periodic low farm earnings. Almost 40 percent of these households had positive household income, even though the farm had negative cash returns. Their household income (\$45,700) averaged about the same as all U.S. households (\$43,133). While in 1994, their farms appeared to be in financial difficulties, money was available for emergencies. Farm households with negative household income reported

very low amounts of off-farm income. Without that extra source of income, these households are likely experiencing household financial restructuring, as well as businesses difficulties.

### **Small Commercial Farms May Also Be Vulnerable**

Another group of farms under particular financial stress is small commercial farms. These farms have gross sales of \$50,000 to \$249,999 and labor expenses less than \$20,000. This group has been declining in numbers faster than the overall decline in numbers of farms. However, data do not show whether this particular group is leaving farming in disproportionate numbers, or moving into other sales classes. Average net cash income for these farms decreased 6 percent from the high in 1993. Because expenses were lower, and the value of inventories higher in 1994, average net farm income was estimated at \$19,600 in 1994, down only 1.5 percent from the year before, a statistically insignificant amount. Fertilizer costs continue to be the highest proportion of total expenses for this group.

Most commercial farms have ratios of cash expenses to cash income of around 75 percent. While we called this group of farms small commercial, they are very small businesses. To generate an income approximately equivalent to that of all U.S. households, they would have to have sales in the upper end of the gross sales category. Many farms in this category are organized as proprietorships and the operators overwhelmingly name farming as their major occupation. Households associated with small commercial-size farms received more than \$26,000 in off-farm income—for total household income equivalent to all U.S. households. Off-farm income is important to households operating small commercial farms. This is emphasized by the fact that households have 50 percent more total income when operators have major occupations other than farming. Even so, operators naming farming as their major occupation generated almost twice as much farm income as the others and their household income was 80 percent of the average U.S. household.

### **Government Payments Are Important to Farms in the Midwest**

Thirty-six percent of all farms received direct government payments in 1994, for an average of \$3,356. Commercial-sized farms were more likely to participate in programs. Not surprisingly, because payments are based on production, larger farms received higher payments per farm. Farms with sales over \$250,000 received 28 percent of payments and produced 46 percent of program commodity sales. Because much of the program payments goes to producers of cash grains, payments are concentrated in the Corn Belt and Northern Plains regions. In those regions, farms have higher debt-to-asset ratios and are more likely to have reached their debt repayment capacity. One in five farms had yearend debt that represented 40 percent or more of total assets. Farms in the cotton-producing areas of the Southwest also have a high ratio of direct government payments to gross cash farm income and high debt-to-asset ratios.

Even though larger farms receive the greater share of payments, for small farms, government payments are a larger



Table 9--Direct government payments share of gross cash farm income, 1994

	Payments per farm	Percent of total payments	Percent of major program sales	Percent of farms reporting payments	Percent of all farms	Percent of total set-aside acreage	Percent of farms reporting payments in class	Percent of total planted program acreage	Percent of planted acreage reporting payments	Payments as a percent of gross cash income	Other income as a percent of gross cash income	Payments per farm
<b>All farms</b>	9,306	100	100	100	100	100	36.07	100	89.03	5	12	3,356
<b>Economic class:</b>												
\$500,000 or over	36,244	13.57	22.26	3.49	2.33	13.14	53.98	15.27	91.21	2	11	19,564
\$250,000 to \$499,999	19,407	14.59	24.14	6.99	3.59	18.24	70.23	20.44	94.42	4	11	13,630
\$100,000 to \$249,999	12,479	27.13	33.59	20.23	10.85	31.45	67.25	36.06	91.32	6	11	8,392
\$50,000 to \$99,999	8,750	16.52	12.32	17.57	10.37	15.51	61.08	16.40	88.75	7	11	5,344
\$10,000 to \$49,999	7,046	20.62	6.26	27.23	24.46	13.00	40.16	9.70	75.16	11	17	2,829
\$9,999 or less	2,877	7.57	1.42	24.49	48.40	8.65	18.25	2.14	48.74	10	40	525
<b>Production specialty:</b>												
Cash grain	10,665	44.31	68.33	38.66	19.79	45.49	70.46	65.24	91.25	9	14	7,515
Cotton	28,178	8.33	14.56	2.75	1.28	15.57	77.46	7.67	96.28	9	16	21,826
All other crop	8,804	21.58	9.13	22.82	22.84	12.40	36.03	4.38	81.14	4	16	3,172
Beef, hog, sheep	6,840	18.56	5.58	25.25	42.75	21.45	21.31	16.2	88.72	4	10	1,457
Dairy	6,254	5.38	2.11	8.00	6.79	3.91	42.51	5.92	63.74	1	4	2,659
All other livestock	6,813	1.84	0.29	2.52	6.56	1.18	13.85	0.58	70.15	2	29	944
<b>Region:</b>												
Northeast	3,993	1.68	1.35	3.93	6.86	3.19	20.64	2.11	44.81	1	9	824
Lake States	8,549	15.17	10.69	16.51	10.56	5.32	56.38	11.32	87.27	6	12	4,820
Corn Belt	7,055	22.39	33.5	29.53	20.58	3.34	51.74	24.82	84.68	5	9	3,650
Northern Plains	9,575	19.98	20.30	19.41	9.14	18.14	76.63	29.31	95.37	8	13	7,336
Appalachia	3,513	1.96	2.48	5.19	14.44	5.26	12.96	2.28	64.23	2	11	456
Southeast	9,483	4.36	2.97	4.27	7.47	7.71	20.64	2.15	79.39	3	11	1,957
Delta	16,208	6.55	7.14	3.76	5.45	6.58	24.88	3.91	90.72	7	19	4,033
Southern Plains	11,621	11.66	9.15	9.33	12.53	23.42	26.87	10.08	94.63	7	12	3,123
Mountain	18,218	10.83	7.02	5.53	5.64	19.53	35.35	9.96	93.65	6	12	6,441
Pacific	20,008	5.43	5.39	2.52	7.32	7.52	12.43	4.06	89.95	2	18	2,488
<b>Acres operated:</b>												
2001 acres or more	30,979	19.71	22.91	5.92	2.85	33.22	74.83	26.85	95.83	6	11	23,183
1001 to 2000 acres	19,120	23.78	28.71	11.58	5.28	26.12	79.02	26.14	94.45	7	12	15,108
501 to 1000 acres	10,293	22.40	28.24	20.25	10.12	20.17	72.15	25.65	90.80	5	12	7,427
251 to 500 acres	7,494	16.73	12.98	20.77	14.05	10.64	53.33	13.27	80.09	5	12	3,997
101 to 250 acres	3,974	11.42	5.78	26.74	24.30	8.87	39.68	6.63	62.73	4	14	1,577
100 acres or less	3,760	5.95	1.38	14.74	43.39	0.98	12.25	1.46	37.02	2	16	461
<b>Net cash farm income:</b>												
\$100,000 or more	27,522	20.84	31.44	7.05	3.79	20.61	66.96	22.93	93.54	3	14	18,430
\$40,000 to \$99,999	14,420	19.22	22.41	12.41	6.96	15.56	64.28	22.68	92.59	5	14	9,269
\$10,000 to \$39,999	8,991	25.82	20.29	26.72	15.50	28.00	62.17	23.55	89.71	7	13	5,590
\$1 to \$9,999	5,630	16.08	8.03	26.58	25.35	11.93	37.81	9.93	81.85	10	11	2,129
\$0 to -\$9,999	3,883	7.08	5.23	16.97	36.04	7.89	16.98	6.35	76.49	7	10	659
-\$10,000 to -\$39,999	7,177	6.06	5.40	7.86	10.04	8.21	28.21	7.45	84.37	7	10	2,025
-\$40,000 or less	18,786	4.90	7.21	2.43	2.31	7.80	37.82	7.10	87.04	3	8	7,105
<b>Net worth:</b>												
\$900,000 or more	21,641	20.64	26.07	8.88	7.25	25.30	44.19	23.47	90.53	3	13	9,562
\$600,000 to \$899,999	11,808	12.14	13.67	9.57	5.85	11.59	58.95	14.41	90.45	5	12	6,961
\$300,000 to \$599,999	9,870	25.10	24.26	23.67	18.59	20.03	45.91	25.39	89.62	6	12	4,531
\$75,000 to \$299,999	6,890	32.02	27.31	43.25	50.14	33.57	31.11	28.82	86.15	7	14	2,143
\$0 to \$74,999	5,953	8.67	6.83	13.55	17.28	7.70	28.29	6.30	89.26	9	9	1,684
Less than \$0	12,169	1.42	1.87	1.09	0.90	1.82	43.80	1.62	96.04	3	6	5,330
<b>Financial position:</b>												
Favorable	9,700	67.33	61.34	64.6	47.27	61.95	49.29	62.90	88.79	5	13	4,781
Marginal income	5,828	14.29	13.94	22.82	44.38	18.81	18.54	16.55	80.91	5	8	1,080
Marginal solvency	16,697	14.63	20.83	8.15	4.37	14.15	67.24	16.20	97.93	4	15	11,227
Vulnerable	7,869	3.75	3.89	4.44	3.98	5.09	40.23	4.36	90.38	5	11	3,165

Source: 1994 Farm Costs and Returns Survey, USDA.

share of their gross income. This impact may be felt even more by those in areas where opportunities for off-farm employment are few. With programs moving toward more market-based production, and possible elimination, financially stressed farmers for whom payments are a large share of gross

income may have some difficult adjustments to make. Financial difficulties may be ahead for communities in areas that depend on farming for a large portion of total earned income.

### **About the Farm Costs and Returns Survey**

This report was prepared using data collected by USDA's Farm Costs and Returns Surveys (FCRS) for 1991 through 1994. The FCRS is an establishment survey, and the target population is the farm. A farm is defined as an establishment that sold or normally would have sold at least \$1,000 of agricultural products during the year. The survey gathers statistics on farm production, gross income, expenses, assets, debt, and characteristics of the senior operator such as age, education, major occupation and household income. It provides the only link between the characteristics of the farm business and the people who run the farms. The sample size is approximately 10,000, representing 2.1 million farms and ranches in 48 contiguous states.

Survey estimates from the FCRS differ from estimates reported for the sector because the FCRS statistically represents resident farm operators. Sector estimates are constructed from many data sources to represent the entire farm sector.

Data are collected from only one operator per farm: the senior farm operator. A senior farm operator is the operator who makes most of the day-to-day decisions. When management is equally shared, USDA interviews the oldest person. This one-farm/one-operator survey design gives us good financial information for the farming business, but limits information about the people who farm when more than one family is involved.

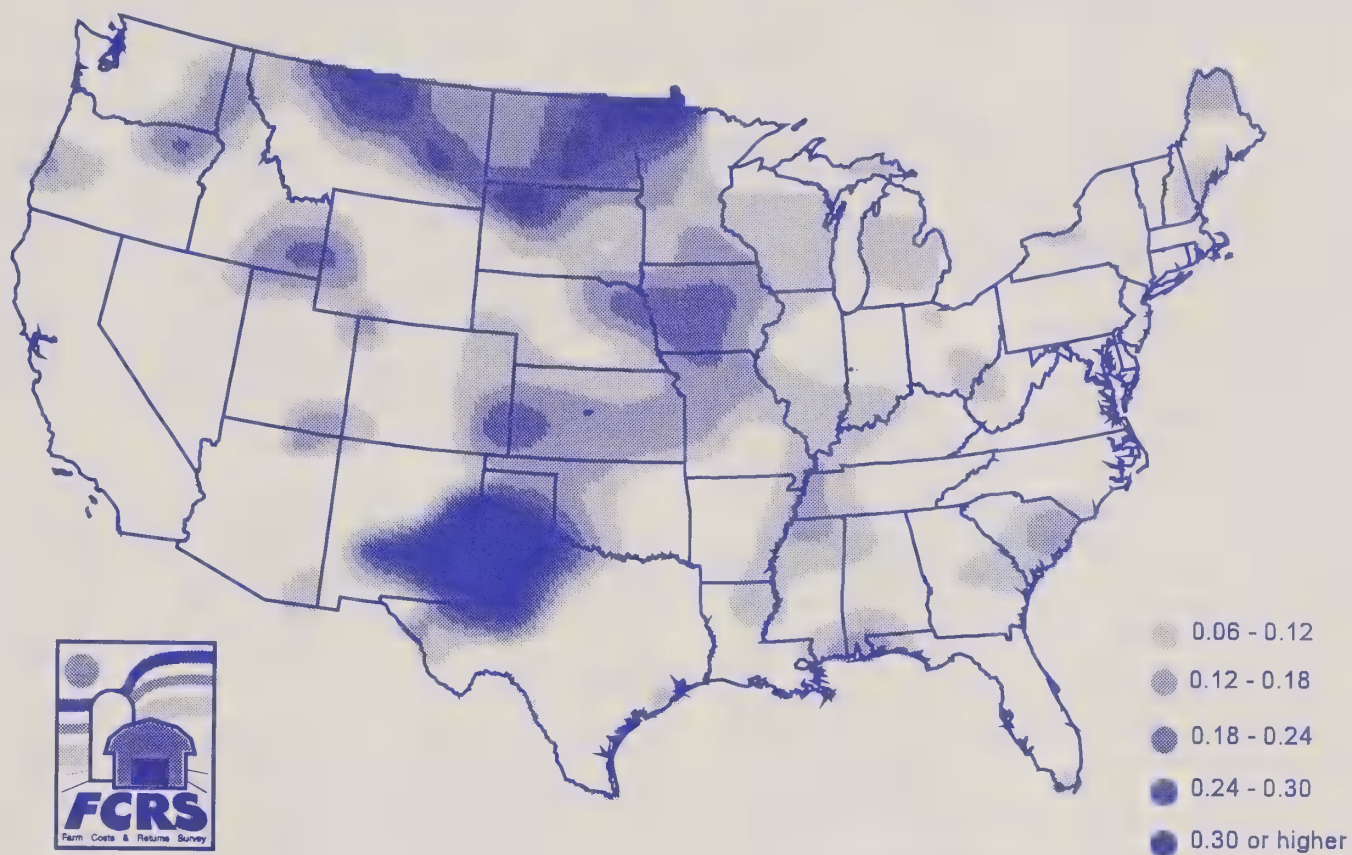
The FCRS is a probability survey. Probability surveys are designed on the premise that every unit in the population has a known probability of being selected. The expansion factors, or weights, are established for each reporting unit and are generally equal to the inverse of the probability of being selected.

Estimates, based on an expanded sample, differ from analysis conducted had a complete enumeration (as in the Census) taken place. Differences in these estimates relate to sampling and non-sampling errors. Sampling errors are usually random and can be measured by a standard error statistic; the larger the standard error, the lower the reliability of the estimate. The relative standard error (RSE) is expressed as a percent and found by dividing the standard error of the estimate by the mean. For some estimates the RSE is sufficiently large to make the estimate unreliable; these instances have been marked in the tables. For other items sample size is not sufficient for statistical reliability and the estimate is not disclosed.



Figure 14

# Ratio of direct government payments to gross cash farm income, 1994



# Accounting for Forestry Sales

by Roger Strickland

**Abstract:** This article describes how the Economic Research Service uses data from USDA state statistical offices, the agricultural census, and annual USDA surveys to estimate farm receipts from forestry product sales.

**Keywords:** Forestry product sales, national income accounting

## Farm Income Accounting

Net value added is income generated from agricultural production by all operations in the farm sector, regardless of organizational form and ownership. It is the cumulative earnings of the contributions of all factors of production—land, labor, capital, and management—regardless of ownership. Because production generates income, net value added is a measure of the share of the output that remains in the farm sector to reward owners/suppliers of factors for their commitment of land, labor, capital, or management skills to production. As a component-measure of net value added, net farm income measures the returns to resources contributed by operators to agricultural production and highlights the economic impact of these resources.

Commodity production is valued at the point of removal from the farm, i.e. as the commodity passes through the proverbial "farm gate," prior to any processing or other enhancements. Net farm income, the difference between gross farm income and production expenses, reflects the earnings to equity holders for their commitment of land, labor, capital, and management skills to production.

Gross farm income also includes revenues from sources in addition to commodity sales. One component reported in the USDA accounts as "Farm-related income" is revenues, other than commodity sales, derived from farm resources, including:

1. Machine hire & custom work
2. Grazing of livestock
3. Forest products
4. Other miscellaneous sources (ex. recreational services)

Production and sales of the major agricultural commodities are frequently collected for the major producing states and published on a regular schedule by the National Agricultural Statistics Service (NASS) as a part of its national survey program. Many other components of gross income are not regularly collected and published. These components must be assembled by the farm income estimation staff. The staffs in NASS's State Statistical Offices (SSO's) provide the best available information regarding many commodities for which little or no data are published in a cooperative effort to obtain a full accounting of the farm sector's production income. In collecting these data, each SSO uses the best available sources, which include state-funded survey programs, the Extension

Service, producer associations, and knowledgeable individuals. The accuracy of any revenue estimates for a particular commodity varies among states, depending on resources supporting the estimate.

As an on-going part of its estimation program, and as resources permit, the farm income staff selectively assesses data employed in the income accounts for reasonableness. One method employed is comparing state and national estimates with comparable measures from alternative sources, two of which are the Agricultural Census and the Farm Cost and Returns Survey (FCRS).

In recent years, revenues from sales of forestry products have frequently surfaced as an area of concern. The national value of forestry sales collected in the 1987 and 1992 Censuses of Agriculture was only a small fraction of the total reported by state offices to ERS; and the correspondence of state estimates varied widely. The values of forestry sales collected on the FCRS have shown a tendency to be consistent with the Census statistics at both the national and regional level. (The FCRS sample size is not sufficient to produce reliable estimates at the state level.)

## Sales of Forestry Products Generate Significant Income

Sales of forestry products are a significant source of income within the farm sector. In recent decades, farmers have adopted an increasingly proactive role in managing their forested land for profit. Tree production is planned and managed; woodlands are prepared, replanted, and thinned to achieve maximum tree growth; and trees are harvested on a schedule for a mix of pulp and timber to maximize the value of production.

Production and sales of forestry products are not a component of NASS's national sales program. Definitional problems are common to all data estimates obtained from sources outside NASS's national survey program, including sales of forestry products. For forest products, some of the pertinent definition issues are the following. The value of forestry products produced and sold from farm operations is a component of the farm sector's gross farm income, but sales from operations not classified as farms are to be included in the forestry sector as defined by the Department of Commerce within the accounting framework for national income accounting. Sales of forest products from farms owned by operators generate income for operators, while sales of forest products from farms



not owned by operators generate income for the non-operator owners (landlords). Operators include all individuals who share in the risks of production, i.e., equity holders. In recognition of the farm-like operational characteristics of Christmas tree producers, Christmas tree receipts are included in cash receipts. Sales of other forestry products (timber, pulp, firewood, etc.) comprise farm-related income.

### ***Sources of Forestry Data Vary Widely***

Given that the forestry sales from each of the 50 states came from different sources, it was not feasible to go to the source to evaluate concepts and methods of collection. Furthermore, ERS has no means of effecting changes in the data collection to accommodate income accounting objectives and is in fact indebted to the sources for providing the information estimated at some considerable cost to the vendor. In many cases the data were collected by a state organization, either public or private, for its own purposes, which may be different from the needs of the farm income accounts.

In assessing the data, several factors surfaced as being explanatory variables for the discrepancies in state estimates. In one major forestry state in which the data were collected by the Extension Service, instructions to county offices requested that timber sold be valued at mill prices to increase comparability with agricultural commodities. In practice, farmers tend to sell standing trees via timber deeds (at an on-the-stump price) and this is the appropriate valuation for farm income accounting. In selling the legal rights to harvest the timber, farmers incur no harvesting and transportation costs and thus report none when expenses are collected on the FCRS. Thus, the "farm gate" is at the stump and not the mill door.

A substantial portion of farmland is owned by non-operator landlords, who are often retired farmers or their widows. They rent tillable and pasture land to operators but not timber-bearing lands. Many, if not most, of the data sources do not (and could not easily) distinguish between forestry sales from land owned by active farm operators and non-operator owners (without interviewing the sellers); so they include all sales from farms. This is significant because non-operator owners tend to have proportionally more of their land in trees than do active operators. Their returns for clearing land (in the form of rent) may be less than that available to an owner-operator and their time horizon for recouping the considerable investment may be much shorter. Many may actually prefer the income protection inherent in diversifying their sources of income.

Depending on the source of the data, some state estimates may include sales of trees from operations that do not meet the definition of a farm and thus are not in the farm sector. Unless certain attributes of the seller are known to the data collector, there is no basis for classifying receipts as being in the farm sector or forestry sector.

### ***Evaluating Forestry Data***

Being dependent on whatever sources of data are available in the public domain and being appreciative of the contributors' efforts, it was not the intent to gauge available data in terms of the vendor's objectives or accuracy, but only to adjust

estimates where the conceptual basis under which it was collected was inconsistent with the ERS farm income accounting concepts. Because information was not available to classify individual sellers as being in or out of the farm sector, the approach followed was to assign to nonfarm landlords that portion of any given state's forestry sales judged, based on data from alternative sources, to be in excess of the operator share.

The method employed is to move the income from operator net farm income to the income accruing to landlords in production expenses. The reassignment leaves the sector's net value added unchanged but removes this income from the operator account, where it definitely does not belong. The means used to effect this transfer is to add the landlord's share to net rent paid by operators to landlords. The unadjusted estimates of forest product sales provided by the source are included in "Farm-related income" and by extension in "Gross farm income;" but after deducting the landlord share as expenses, only the operator share is reflected in "Net farm income."

The 1992 Census of Agriculture collected and reported sales of "those forest products or Christmas trees cut from this place." In the farm income accounting, Christmas tree sales are recorded in cash receipts and sales of "other forest products" are included separately in "farm related income." In table 10, the two components are presented in the amounts included in the 1994 farm related income accounts along with the total for the two. Likewise, the forestry sales from the 1992 Census of Agriculture are shown for comparison.

The U.S. total included in the farm income accounts is ten times that reported in the Census. Consequently, the primary focus of this evaluation is the apparent gross overestimation of forestry sales existing in estimates obtained from states. Thus, states were excluded from further consideration if the Census estimate was equal to at least half of the total of Christmas trees and other forest products included in the farm income accounts, on the assumption that the estimate is within the realm of reasonableness and that there is no indication of a serious problem. Neither the information nor resources are available to permit micro-managing the definition and collection techniques underlying the data collected from these excluded states. Any attempt to adjust estimates from the excluded states would amount to quibbling over amounts that would yield relatively small gains from attempting corrections and could introduce more offsetting errors.

### ***Adjusting Forestry Data***

In seeking a basis to pass judgement on the estimates from states remaining under consideration, two alternative sources of check-data used were the annual FCRS and the 1992 Census of Agriculture. Census data were used primarily for the initial screening to identify and eliminate those states whose estimates are by all appearances within a reasonable range. FCRS data were then used to determine if a partitioning of income from forest product sales between operators and landlords was warranted for the remaining states and to effect the divisioning. Because the FCRS cannot support statistically reliable estimates below the level of the standard ten produc-

Table 10 -- Value of sales of forestry products harvested on farms from three data sources for States, 1992-94.

	-----NASS 1994-----			1992 census of agriculture	Ratio of NASS total to census	-----Region totals-----		Adjustment Status
	Christmas Trees	Other forest products	Total of forest products			1994 FCRS (with cv)	1993 FCRS (with CV)	
	-----\$1,000-----					-----\$1,000-----		
Region One:	62,150	109,240	171,390	56,709	0.52	38,129	45,535	
Connecticut	8,000	1,105	9,105	1,393	1.26	(cv=23)	(cv=21)	exempt
Delaware		2,475	2,475	324	0.13			
Maine	6,000	8,300	14,300	4,335	0.52			exempt
Maryland		29,630	29,630	3,348	0.11			
Massachusetts	15,000	3,150	18,150	2,478	0.79			exempt
New Hampshire	8,000	3,250	11,250	2,787	0.86			exempt
New Jersey		27,820	27,820	1,970	0.07			
New York	12,600	9,450	22,050	18,830	1.99			exempt
Pennsylvania		19,000	19,000	14,948	0.79			exempt
Rhode Island	950	150	1,100	215	1.43			exempt
Vermont	11,600	4,910	16,510	6,081	1.24			exempt
Region Two:	79,500	89,650	169,150	25,160	0.28	20,400	24,667	
Michigan	40,000	11,000	51,000	9,036	0.82	(cv=25)	(cv=29)	exempt
Minnesota	1,500	2,850	4,350	3,732	1.31			exempt
Wisconsin	38,000	75,800	113,800	12,392	0.16			
Region Three:	25,435	230,575	256,010	29,404	0.13	67,967	20,980	
Illinois		5,000	5,000	4,958	0.99	(cv=39)	(cv=28)	exempt
Indiana	5,300	16,200	21,500	7,421	0.46			
Iowa	1,260	15,000	16,260	2,644	0.18			
Missouri	4,000	6,200	10,200	5,095	0.82			exempt
Ohio	14,875	188,175	203,050	9,286	0.05			
Region Four:	2,101	19,356	21,457	2,352	0.12	1,204	(29)	
Kansas	1,900	16,446	18,346	758	0.05	(cv=99)	(cv=98)	
Nebraska		2,000	2,000	686	0.34			
North Dakota	201	310	511	318	1.03			exempt
South Dakota		600	600	590	0.98			exempt
Region Five:	90,000	787,633	877,633	48,049	0.06	109,228	102,340	
Kentucky		153,500	153,500	6,972	0.05	(cv=49)	(cv=26)	
North Carolina	90,000	565,400	655,400	18,068	0.03			
Tennessee		54,252	54,252	9,250	0.17			
Virginia		10,481	10,481	9,982	0.95			exempt
West Virginia		4,000	4,000	3,777	0.94			exempt
Region Six:	4,000	352,200	356,200	46,060	0.13	82,365	162,370	
Alabama	0	180,000	180,000	13,011	0.07	(cv=32)	(cv=35)	
Florida	1,000	15,000	16,000	7,697	0.51			exempt
Georgia		148,800	148,800	18,655	0.13			
South Carolina	3,000	8,400	11,400	6,697	0.80			exempt
Region Seven:	7,636	111,752	119,388	28,740	0.26	34,879	28,522	
Arkansas		10,700	10,700	7,844	0.73	(cv=42)	(cv=32)	exempt
Louisiana	2,396	53,896	56,292	6,496	0.12			
Mississippi	5,240	47,156	52,396	14,400	0.31			
Region Eight:	10,000	80,000	90,000	14,452	0.18	27,424	1,745	
Oklahoma		2,000	2,000	1,789	0.89	(cv=74)	(cv=80)	exempt
Texas	10,000	78,000	88,000	12,663	0.16			
Region Nine:	7,215	22,337	29,552	11,003	0.49	24,173	23,365	
Arizona	82	11,651	11,733	227	0.02	(cv=44)	(cv=33)	
Colorado		750	750	803	1.07			exempt
Idaho	5,319	442	5,761	3,184	7.20			exempt
Montana		3,600	3,600	4,249	1.18			exempt
Nevada		100	100	0	0.00			exempt
New Mexico	1,674	5,000	6,674	1,674	0.33			
Utah	140	94	234	224	2.38			exempt
Wyoming		700	700	642	0.92			exempt
Region Ten:	136,251	885,400	1,021,651	45,420	0.05	136,601	104,958	
California	22,000	9,100	31,100	9,077	1.00	(cv=39)	(cv=37)	exempt
Oregon	72,251	521,300	593,551	25,822	0.05			
Washington	42,000	355,000	397,000	10,521	0.03			
United States	424,288	2,688,143	3,112,431	307,349	0.11	542,370	514,453	



tion regions, all comparative evaluations were made at the regional level and any adjustment determined to be warranted was applied to all states not exempted within that region (table 11).

Comparisons were made with the 1993 FCRS and the 1994 FCRS. The least intrusive adjustment indicated by the alternative comparisons was implemented, in deference to the on-site expertise of the collecting entities regarding their own state. Because the FCRS surveys only farm operators, conceptually its forestry sales should reflect only sales by operators. Thus, the ratio of the FCRS estimate to the NASS estimate should provide a basis for adjusting the NASS estimate. In doing so, only ratios with a coefficient-of-variation (cv) of less than 50 percent were considered for use. Of the two ratios developed (for 1993 and 1994) the larger was selected, to minimize the change to the estimates of operators' sales, unless the cv of the other ratio was considerably more respectable (less than half). If neither cv was less than 50, the ratio of the 1992 Census estimate to the NASS estimate was used. The aforementioned method of comparisons with FCRS data was not applicable to four regions for different reasons. Alternative procedures were used to develop the ratio of adjustment in each of the four cases and are described below.

In region 4, the Northern Plains, the use of both the 1993 and 1994 FCRS estimates was precluded by cv's of near 100 (table 11). In this situation, the ratio of the Agricultural Census estimate of the forest product sales to the estimate from NASS was used instead. Under this procedure, operators received only a 12-percent share of forest product sales.

For region 6, the South Atlantic, the selection criteria would dictate assigning operators 46 percent of the proceeds from sales because the 1994 ratio (0.46) is the higher of the two ratios. However, with the 1994 ratio double the 1993 ratio (0.23), no significant difference in the respective cv's, and both cv's being in the upper part of an acceptable range, there is no real basis to choose between the two ratios. So, to develop supplemental information, the identical procedure was then applied using 1992 estimates as supplied by NASS, the 1992 FCRS, and the 1993 FCRS in order to ascertain what these ratios might be. The ratios for 1992 (0.56 with cv 37) and 1993 (0.61 with cv 35) did not yield a cv sufficiently different from the others to warrant selection of an associated ratio

from among the four. As a solution, an average of the four ratios was taken to yield a ratio of 0.47, which is virtually identical to the 0.46 that would have been dictated by the selection criteria initially established. The operators' share was set at 47 percent because it was based on additional information.

Region 8 is composed only of Texas and Oklahoma, both of which are characterized by forested lands in the east that give way to open plains to the west. The Texas State staff indicated that the state's forestry sales were not well represented by either the FCRS or the Census. As a result, the comparative relationship established in region 7, which abuts region 8 on its east side, was adopted for region 8.

For region 9, the Mountain States and Southwest, the two ratios were greater than one, not only as shown in table 11 but also when the identical procedure was applied to data for 1992 and 1993. As a result, a ratio of 1.0 was adopted with the effect that no adjustments were made to the NASS estimates and operators retained all of the forestry sales.

### Summary

Alaska and Hawaii are not included in the FCRS survey and were not considered for an adjustment to forestry sales. An additional 26 states were exempted from further scrutiny because the 1994 estimates provided through NASS were less than double the estimate in the 1992 Census of Agriculture. No adjustment was found to be warranted for the three states not previously exempted in region 9. In all other aspects of the analysis, every effort was made to give the benefits of any reasonable doubt to the original source of the NASS-provided estimate.

Adjustments were made for 19 states, dividing the forestry sales between operators and landlords (table 12). In 1994, the value assigned to landlords totaled \$1.9 billion. Three states accounted for 62 percent (\$1.2 billion) of the total—North Carolina (\$475 million), Oregon (\$433 million), and Washington (\$295 million). Smaller revisions were implemented back to 1987. Sales of Christmas trees were not affected by these changes due to their inclusion in cash receipts. These changes reduce net farm income to operators by an equal amount but have no effect on the sector value-added, as the income is merely shifted to the landlords' account.

Table 11 -- Determination of share of forestry sales from farm land owned by operators and by others.

Region	Ratio census to NASS	----Operator share----		Source of ratio 1/	Share of sales	Landlord share of sales
		Ratio FCRS-94 to NASS	Ratio FCRS-93 to NASS			
		Ratio			Percent	
One	0.52	0.35 (cv=23)	0.42 (cv=21)	93 FCRS	0.42	0.58
Two	0.28	0.23 (cv=25)	0.28 (cv=29)	93 FCRS	0.28	0.72
Three	0.13	0.29 (cv=39)	0.09 (cv=28)	94 FCRS	0.29	0.71
Four	0.12	0.06 (cv=99)	0.00 (cv=98)	Census	0.12	0.88
Five	0.06	0.14 (cv=49)	0.13 (cv=26)	93 FCRS	0.13	0.87
Six	0.13	0.23 (cv=32)	0.46 (cv=35)	92-94	0.47	0.53
Seven	0.26	0.31 (cv=42)	0.26 (cv=32)	94 FCRS	0.31	0.69
Eight:	0.18	0.34 (cv=74)	0.02 (cv=80)	Region 7	0.31	0.69
Nine:	0.49	1.08 (cv=44)	1.05 (cv=33)	92-94	1.00	0.00
Ten:	0.05	0.15 (cv=39)	0.12 (cv=37)	94 FCRS	0.15	0.85
U.S.	0.11					

1/ In selecting the ratios to represent the operators' share, four regions were exceptions:

Region 4: Used the Census of Agriculture to compute adjustment ratio because neither of the two FCRS cv's were within an acceptable range.

Region 6: Used an average of the two ratios shown in this table and two other ratios (1992: 0.56 with cv=37 and 1993: 0.61 with cv=35) developed via an identical application involving years 1992 and 1993.

Region 8: Because most forests are in extreme eastern part of region, the operators' share developed for region 7, positioned east of region 8, was deemed to be more representative.

Region 9: FCRS estimate exceeded the NASS total in cases shown above and in the two cases developed via an identical application involving 1992 (2.59 with cv 53) and 1993 (1.23 with cv 33). The cv's were less than 50 for 3 of the four ratios. Selected ratio of 1.0 giving operators all sales.



Table 12 -- Value of State forestry sales within farm sector determined to have been from lands not owned by farm operators, 1987-94

State	Landlord share of sales	-----Value of forestry sales to be credited to landlords-----								1994 share of total
		1987	1988	1989	1990	1991	1992	1993	1994	
	Percent	\$1,000-----								Percent
AL	53	48,972	47,541	54,060	55,650	55,650	61,480	71,550	95,400	4.9
AK	na	0	0	0	0	0	0	0	0	0.0
AZ	0	0	0	0	0	0	0	0	0	0.0
AR	0	0	0	0	0	0	0	0	0	0.0
CA	0	0	0	0	0	0	0	0	0	0.0
CO	0	0	0	0	0	0	0	0	0	0.0
CT	0	0	0	0	0	0	0	0	0	0.0
DE	58	1,305	1,305	1,334	1,380	1,415	1,607	1,436	1,436	0.1
FL	0	0	0	0	0	0	0	0	0	0.0
GA	53	45,739	46,693	46,799	54,749	57,399	67,999	72,610	78,864	4.1
HI	na	0	0	0	0	0	0	0	0	0.0
ID	0	0	0	0	0	0	0	0	0	0.0
IL	0	0	0	0	0	0	0	0	0	0.0
IN	71	8,000	8,800	9,681	9,585	10,544	12,652	15,183	11,502	0.6
IA	71	2,166	2,734	2,166	2,166	11,538	10,650	10,650	10,650	0.6
KS	81	20,557	20,107	20,939	16,817	16,861	12,455	12,737	14,860	0.8
KY	84	15,120	17,539	39,480	61,320	84,000	118,860	123,060	128,940	6.7
LA	69	17,971	21,466	21,701	24,047	24,938	28,846	33,070	37,188	1.9
ME	0	0	0	0	0	0	0	0	0	0.0
MD	58	11,832	11,890	12,760	13,340	16,037	16,965	16,994	17,185	0.9
MA	0	0	0	0	0	0	0	0	0	0.0
MI	0	0	0	0	0	0	0	0	0	0.0
MN	0	0	0	0	0	0	0	0	0	0.0
MS	69	30,015	31,050	30,360	30,360	28,290	27,600	30,912	32,538	1.7
MO	0	0	0	0	0	0	0	0	0	0.0
MT	0	0	0	0	0	0	0	0	0	0.0
NE	81	3,382	3,382	2,349	2,025	2,066	2,147	2,066	1,620	0.1
NV	0	0	0	0	0	0	0	0	0	0.0
NH	0	0	0	0	0	0	0	0	0	0.0
NJ	58	7,922	8,951	9,399	12,180	11,368	11,797	15,223	16,136	0.8
NM	0	0	0	0	0	0	0	0	0	0.0
NY	0	0	0	0	0	0	0	0	0	0.0
NC	84	375,480	349,440	352,800	369,600	365,400	419,012	452,182	474,936	24.5
ND	0	0	0	0	0	0	0	0	0	0.0
OH	71	11,786	95,850	99,400	101,654	101,654	119,404	126,504	133,604	6.9
OK	0	0	0	0	0	0	0	0	0	0.0
OR	83	132,846	129,922	199,773	176,077	148,423	286,486	398,510	432,679	22.3
PA	0	0	0	0	0	0	0	0	0	0.0
RI	0	0	0	0	0	0	0	0	0	0.0
SC	0	0	0	0	0	0	0	0	0	0.0
SD	0	0	0	0	0	0	0	0	0	0.0
TN	84	73,692	90,250	89,116	72,991	27,410	31,434	43,242	45,572	2.4
TX	69	48,300	48,990	37,950	41,400	46,230	48,300	49,680	53,820	2.8
UT	0	0	0	0	0	0	0	0	0	0.0
VT	0	0	0	0	0	0	0	0	0	0.0
VA	0	0	0	0	0	0	0	0	0	0.0
WA	83	117,653	146,928	188,121	185,090	157,700	244,850	286,350	294,650	15.2
WV	0	0	0	0	0	0	0	0	0	0.0
WI	72	80,532	51,048	55,368	61,286	65,473	40,273	54,360	54,576	2.8
WY	0	0	0	0	0	0	0	0	0	0.0
US		1,053,269	1,133,886	1,273,555	1,291,717	1,232,395	1,562,817	1,816,318	1,936,156	100

**Appendix table 1--Farm income statements, 1991-96F**

Item	1991	1992	1993	1994	1995F	1996F
Billion dollars						
Cash income:						
1. Cash receipts	167.8	171.3	177.1	179.7	184.1	184 to 192
Crops 1/	82.0	85.7	87.1	91.6	97.0	98 to 103
Livestock	85.7	85.6	90.0	88.1	87.2	85 to 89
2. Direct government payments	8.2	9.2	13.4	7.9	6.2	3 to 5
3. Farm-related income 2/	8.3	8.2	9.1	9.2	9.3	9 to 11
4. Gross cash income (1+2+3)	184.3	188.6	199.6	196.7	199.6	198 to 206
5. Cash expenses 3/	133.9	133.2	141.5	146.9	148.4	150 to 158
6. NET CASH INCOME (4-5)	50.4	55.4	58.1	49.8	51.2	43 to 53
Deflated (1987\$) 4/	42.8	47.7	47.0	39.5	39.9	32 to 42
Farm income:						
7. Gross cash income (1+2+3)	184.3	188.6	199.6	196.7	199.6	198 to 206
8. Nonmoney income 5/	7.7	7.8	7.9	8.1	8.2	7 to 9
9. Inventory adjustment	-0.2	4.2	-4.5	8.7	-1.2	3 to 7
10. Total gross income (7+8+9)	191.8	200.5	203.0	213.5	206.6	211 to 219
11. Total expenses	153.4	152.6	160.9	166.7	168.0	169 to 177
12. NET FARM INCOME (10-11)	38.4	48.0	42.1	46.7	38.6	37 to 47
Deflated (1987\$) 4/	32.6	39.7	34.1	37.1	30.1	27 to 37

F = forecast. Totals may not add due to rounding.

1/ Includes payments received from CCC for placements of crops under nonrecourse loans.

2/ Income from machine hire and custom work, forest product sales, custom feeding service fees, and other farm sources.

3/ Excludes expenses for onfarm operator dwellings and noncash items such as capital consumption and perquisites to hired labor.

4/ Deflated by the GDP implicit price deflator.

5/ Includes the value of home consumption of farm products plus imputed rental value of operator dwellings.



**Appendix table 2--Average income to farm operator households, 1991-96F 1/**

Item	1991	1992	1993	1994	1995F	1996F
Dollars per operator household						
Farm operator household income	37,447	42,911	40,223	44,140	43,410	41,700 to 46,700
Farm income 2/	5,810	7,180	4,815	5,200	4,898	2,600 to 5,600
From self-employment	4,458	5,172	3,623	3,983	n/a	n/a
From other	1,352	2,008	1,192	1,217	n/a	n/a
Off-farm income	31,638	35,731	35,408	38,939	38,512	39,100 to 41,100
From wages, salaries, and non-farm businesses	23,551	27,022	25,215	29,355	n/a	n/a
From interest, dividends, and transfer payments, etc.	8,086	8,709	10,194	9,584	n/a	n/a

F = forecast. n/a = not available. Totals may not add due to rounding.

1/ Data for 1991-94 are expanded to represent the total number of U.S. farms and ranches.

2/ Farm income to the household equals self-employment income plus amounts that operators pay themselves and family members to work on the farm, income from renting out acreage (1991-92), and net income from a farm business other than the one being surveyed. In 1993 and 1994, income from renting out acreage is included in income from interest, dividends, transfer payments, etc.

For information on household income contact: Judy Kalbacher (202) 219-0592

**Appendix table 3--Relationship of net cash to net farm income, 1991-96F**

Item	1991	1992	1993	1994	1995F	1996F
Billion dollars						
Gross cash income	184.3	188.6	199.6	196.7	199.6	198 to 206
Minus cash expenses	133.9	133.2	141.5	146.9	148.4	150 to 158
Equals net cash income	50.4	55.4	58.1	49.8	51.2	43 to 53
Plus nonmoney income 1/	7.7	7.8	7.9	8.1	8.2	7 to 9
Plus value of inventory change	-0.2	4.2	-4.5	8.7	-1.2	3 to 7
Minus noncash expenses	15.4	15.2	15.3	15.4	15.4	14 to 16
Labor perquisites	0.5	0.5	0.4	0.4	0.5	0 to 1
Net capital consumption	14.9	14.7	14.9	15.0	15.0	14 to 16
Capital consumption excl. dwellings	16.3	16.1	16.3	16.4	16.4	15 to 17
- Landlord capital consumption	1.4	1.4	1.4	1.4	1.4	0 to 2
Minus operator dwelling expenses	4.1	4.2	4.1	4.3	4.1	3 to 5
Capital consumption	1.9	2.2	2.1	2.0	2.2	1 to 3
Interest	0.6	0.6	0.5	0.6	0.5	0 to 2
Property taxes	0.6	0.6	0.7	0.7	0.7	0 to 2
Repair and maintenance	0.7	0.6	0.5	0.7	0.5	0 to 1
Insurance	0.3	0.3	0.3	0.3	0.2	0 to 1
Equals net farm income	38.4	48	42.1	46.7	38.6	37 to 47

F = forecast.

1/ The value of home consumption and gross rental value of all dwellings.



**Appendix table 4--Cash receipts, 1991-96F**

Item	1991	1992	1993	1994	1995F	1996F
Billion dollars						
Crop receipts 1/	82.0	85.7	87.1	91.6	97.0	98 to 103
Food grains	7.3	8.5	8.2	9.5	10.1	9 to 11
Wheat	6.3	7.2	7.5	7.8	8.7	8 to 10
Rice	1.0	1.3	0.7	1.7	1.4	1 to 2
Feed grains and hay	19.3	20.1	20.2	20.6	22.3	22 to 26
Corn	14.4	14.7	14.6	15.0	16.5	17 to 19
Sorghum, barley, and oats	2.1	2.3	2.0	1.9	2.1	1 to 3
Oil crops	12.7	13.3	13.2	15.2	15.1	16 to 18
Soybeans	11.0	11.6	11.8	13.4	13.5	14 to 16
Peanuts	1.4	1.3	1.0	1.2	1.0	1 to 2
Cotton lint and seed	5.2	5.2	5.2	5.7	7.0	6 to 8
Tobacco	2.9	3.0	2.9	2.6	2.5	2 to 4
Fruits and nuts	9.9	10.2	10.3	10.1	11.0	10 to 13
Vegetables	11.5	11.8	13.1	13.0	13.8	12 to 15
Greenhouse & nursery	9.1	9.3	9.7	10.0	10.2	10 to 11
Livestock receipts 2/	85.8	85.6	90.0	88.1	87.2	85 to 89
Red meats	50.1	47.7	50.8	46.8	46.3	42 to 50
Cattle and calves	38.7	37.3	39.4	36.4	35.2	33 to 38
Hogs	11.0	10.0	10.9	9.9	10.5	9 to 10
Sheep and lambs	0.4	0.5	0.5	0.5	0.6	0 to 1
Poultry and eggs	15.1	15.5	17.3	18.4	17.9	16 to 20
Broilers	8.4	9.2	10.4	11.4	11.0	10 to 12
Turkeys	2.4	2.4	2.5	2.7	2.7	2 to 3
Eggs	3.9	3.4	3.8	3.8	3.6	2 to 4
Dairy products	18.0	19.7	19.2	19.9	20.0	19 to 22
TOTAL RECEIPTS	167.8	171.3	177.1	179.7	184.1	184 to 192

F = forecast. Totals may not add due to rounding.

1/ Includes sugar, seed, and other miscellaneous crops.

2/ Includes miscellaneous livestock and livestock products.

**Appendix table 5--Farm production expenses, 1991-96F**

Item	1991	1992	1993	1994	1995F	1996F
Billion dollars						
Farm-origin	38.9	38.9	41.6	41.6	41.8	42 to 46
Feed purchased	19.3	20.1	21.4	22.6	23.6	23 to 27
Livestock and poultry purchased	14.4	13.9	15.0	13.6	12.9	11 to 15
Seed purchased	5.1	4.9	5.2	5.4	5.3	5 to 7
Manufactured inputs	20.6	20.1	20.5	21.7	22.3	21 to 25
Fertilizer and lime	8.7	8.3	8.4	9.2	9.7	8 to 12
Pesticides	6.3	6.5	6.7	7.2	7.3	7 to 9
Petroleum fuel and oils	5.6	5.3	5.3	5.3	5.4	4 to 7
Interest	12.1	11.2	10.8	11.7	12.6	11 to 14
Nonreal estate	6.1	5.4	5.3	6.0	6.7	5 to 8
Real estate	6.0	5.8	5.5	5.7	5.9	5 to 7
Other operating expenses	47.9	47.3	52.4	55.6	54.3	54 to 59
Repair and maintenance	8.6	8.5	9.2	9.2	9.0	8 to 10
Machine hire and customwork	3.5	3.8	4.4	4.8	4.5	4 to 6
Marketing, storage & transportation	4.7	4.5	5.6	6.7	6.0	6 to 8
Labor	13.9	14.0	15.0	15.3	15.0	14 to 18
Miscellaneous	17.2	16.5	18.1	19.6	19.8	18 to 22
Other overhead expenses	33.9	35.1	35.7	36.1	36.9	36 to 39
Capital consumption	18.2	18.3	18.4	18.5	18.6	16 to 20
Property taxes	5.8	6.0	6.3	6.6	6.9	6 to 8
Net rent to nonoperator landlords	9.9	10.7	11.0	11.1	11.5	11 to 13
Total production expenses	153.4	152.6	160.9	166.7	168.0	169 to 177
Noncash expenses	15.5	15.2	15.3	15.5	15.4	14 to 16
Labor perquisites	0.5	0.5	0.4	0.4	0.5	0 to 1
Net capital consumption	14.9	14.7	14.9	15.0	15.0	14 to 16
Capital consumption excl. dwellings	16.3	16.1	16.3	16.4	16.4	15 to 17
- Landlord capital consumption	1.4	1.4	1.4	1.4	1.4	0 to 2
Operator dwelling expenses	4.1	4.2	4.1	4.3	4.1	3 to 5
Capital consumption	1.9	2.2	2.1	2.0	2.2	1 to 3
Interest	0.6	0.6	0.5	0.6	0.5	0 to 2
Property taxes	0.6	0.6	0.7	0.7	0.7	0 to 2
Repair and maintenance	0.7	0.6	0.5	0.7	0.5	0 to 1
Insurance	0.3	0.3	0.3	0.3	0.2	0 to 1
Cash expenses 1/	133.9	133.2	141.5	146.9	148.4	150 to 158

F = forecast.

1/ Total production expenses minus noncash and onfarm operator dwelling expenses.



**Appendix table 6--Farm income distribution by selected enterprise type, 1993-96F 1/**

Item	Crops				Livestock			
	Total	2/ Cash grain	Cotton	Fruit/nut/vegetable	Total	Red meat	Poultry	Dairy
Cash receipts--								
Billion dollars								
Crops								
1993	79.7	29.7	4.2	21.9	7.4	5.6	0.4	1.1
1994	85.6	34.1	5.6	24.8	6.0	4.2	0.2	1.0
1995F	87.0	34.9	6.0	23.6	10.1	6.0	*	1.1
1996F	90.4	37.7	5.7	23.6	10.8	6.4	*	1.2
Livestock								
1993	4.4	3.0	0.1	0.1	85.6	43.0	17.4	22.0
1994	7.7	5.6	0.1	0.1	80.4	36.5	18.5	22.2
1995F	4.0	2.8	*	*	83.2	38.7	17.9	22.0
1996F	4.0	2.7	*	*	83.4	38.4	17.8	22.7
Direct government payments								
1993	9.9	6.4	1.1	0.2	3.5	2.7	0.0	0.7
1994	6.1	3.5	0.6	0.2	1.7	1.3	0.0	0.3
1995F	4.4	3.1	*	*	1.8	1.2	*	*
1996F	2.7	1.8	*	*	1.1	0.7	*	*
Gross cash income-- 3/								
1993	99.6	41.5	5.9	23.4	100.0	53.3	18.7	24.1
1994	105.4	45.2	6.8	27.1	91.3	43.4	19.9	24.1
1995F	100.3	42.6	6.9	25.0	99.4	48.2	18.8	24.2
1996F	102.1	44.3	6.4	24.9	99.8	48.0	18.7	24.9
Cash expenses--								
1993	65.8	27.5	3.7	13.9	75.7	44.7	9.0	19.4
1994	74.2	31.9	4.5	16.7	72.7	36.6	12.5	20.3
1995F	69.4	30.8	4.2	15.2	79.0	46.7	9.4	21.6
1996F	72.0	32.0	4.3	15.7	81.8	48.0	9.4	22.6
Net cash income--								
Current dollars 4/								
1993	33.8	14.1	2.2	9.5	24.3	8.7	9.8	4.8
1994	31.2	13.3	2.4	10.4	18.6	6.7	7.4	3.8
1995F	30.9	11.7	2.7	9.8	20.3	1.5	9.4	2.6
1996F	30.1	12.3	2.1	9.2	18.0	*	9.3	2.3
Deflated (\$1987)								
1993	27.4	11.4	1.8	7.7	19.7	7.0	7.9	3.9
1994	24.7	10.6	1.9	8.2	14.7	5.3	5.9	3.0
1995F	24.1	9.2	2.1	7.6	15.8	1.2	7.4	2.1
1996F	23.0	9.4	1.6	7.0	13.7	*	7.1	1.7

F = forecast. \* = less than \$500 million. Numbers are rounded.

1/ Farm types are defined as those with 50 percent or more of the value of production accounted for by a specific commodity or commodity group.

2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains.

3/ Cash receipts plus government payments plus farm-related income.

4/ Gross cash income minus cash expenses.

**Appendix table 7--Value added by the agricultural sector, 1991-96F 1/**

Item	1991	1992	1993	1994	1995F	1996F
Billion dollars						
Crop output	80.9	89.0	81.6	98.9	94.7	100 to 108
Cash receipts	82.0	85.7	87.1	91.6	97.0	98 to 103
Home consumption	0.1	0.1	0.1	0.1	0.1	0 to 1
Value of inventory adjustment	-1.2	3.2	-5.6	7.3	-2.4	1 to 5
Livestock and poultry output	87.3	87.0	91.6	89.9	88.8	84 to 92
Cash receipts	85.8	85.6	90.0	88.1	87.2	85 to 89
Home consumption	0.5	0.5	0.5	0.4	0.4	0 to 1
Value of inventory adjustment	1.0	1.0	1.1	1.4	1.2	-1 to 3
Farm-related income	8.3	8.2	9.1	9.2	9.3	9 to 11
Gross rental value of farm dwellings	7.1	7.2	7.3	7.6	7.8	7 to 9
Equal: Agricultural sector output	183.6	191.3	189.6	205.6	200.4	207 to 215
Less: Intermediate consumption outlays	94.7	93.7	100.8	105.1	105.0	106 to 114
Farm origin	38.9	38.9	41.6	41.6	41.8	42 to 46
Feed purchased	19.3	20.1	21.4	22.6	23.6	23 to 27
Livestock and poultry purchased	14.4	13.9	15.0	13.6	12.9	11 to 15
Seed purchased	5.1	4.9	5.2	5.4	5.3	5 to 7
Manufactured inputs	20.6	20.1	20.5	21.7	22.3	21 to 25
Fertilizer and lime	8.7	8.3	8.4	9.2	9.7	8 to 12
Pesticides	6.3	6.5	6.7	7.2	7.3	7 to 9
Fuel and oils	5.6	5.3	5.4	5.3	5.4	4 to 7
Other	35.3	34.6	38.8	41.8	54.3	54 to 59
Repair and maintenance	8.6	8.5	9.2	9.2	9.0	8 to 10
Machine hire and custom work	3.5	3.8	4.4	4.8	4.5	4 to 6
Marketing, storage, and transportation	4.7	4.5	5.6	6.7	6.0	6 to 8
Contract labor	1.6	1.7	1.8	1.8	1.8	1 to 3
Miscellaneous	16.8	16.1	17.8	19.3	19.8	18 to 22
Plus: Net government transactions	2.1	2.8	6.8	1.0	-1.1	-6 to -2
+Direct government Payments	8.2	9.2	13.4	7.9	6.2	3 to 5
-Vehicle registration and licensing fees	0.3	0.4	0.4	0.3	0.3	0 to 1
-Property taxes	5.8	6.0	6.3	6.6	6.9	6 to 8
Equal: Gross value added	90.9	100.4	95.5	101.5	94.4	93 to 103
Less: Capital consumption	18.2	18.3	18.4	18.5	18.6	16 to 20
Equal: NET VALUE ADDED	72.7	82.1	77.2	83.0	75.8	74 to 84

F = forecast.

1/ Components are from the farm income accounts and include income and expenses related to farm operator dwellings. The concept is consistent with that employed by the Organization for Economic Cooperation and Development.



**Appendix table 8--Farm business balance sheet, 1991-96F**

Item	1991	1992	1993	1994	1995F	1996F
Billion dollars						
Farm assets	843.7	868.4	902.9	933.5	956.6	985 to 995
Real estate	624.4	640.6	670.9	703.3	726.0	747 to 757
Livestock and poultry	68.1	71.0	72.8	68.3	68.3	67 to 71
Machinery and motor vehicles	85.8	85.6	85.2	85.7	87.2	87 to 91
Crops stored 1/	22.2	24.2	23.3	23.4	23.1	23 to 27
Purchased inputs	2.7	3.9	4.2	5.0	4.0	4 to 5
Financial assets	40.6	43.1	46.6	47.7	48.0	48 to 52
Farm debt	139.2	139.1	142.0	146.8	151.0	153 to 157
Real estate 2/	74.9	75.4	76.0	77.6	78.7	79 to 83
Nonreal estate	64.3	63.6	65.9	69.1	72.0	72 to 76
Farm equity	704.5	729.4	761.0	786.7	805.9	830 to 840

F = forecast

1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC.

2/ Includes CCC storage and drying facility loans.

**Appendix table 9--Farm sector rates of return, 1991-96F**

Item	1991	1992	1993	1994	1995F	1996F
Percent						
Rate of return on assets	3.1	4.1	2.9	3.6	2.2	2 to 3
Real capital gains on assets	-1.9	0.4	2.3	1.3	0.8	0 to 1
Total real return on assets 1/	1.2	4.5	5.3	4.9	3.0	2 to 3
Average interest rate paid on debt	8.3	7.6	7.3	7.7	8.1	7 to 9
Real capital gains on debt	3.6	2.7	2.1	2.0	2.9	4 to 5
Real cost of debt 2/	4.6	4.9	5.2	5.7	5.2	3 to 4
Rate of return on equity	2.0	3.4	2.1	2.9	1.1	1 to 2
Real capital gains on equity	-1.5	1.0	3.1	1.9	1.3	0 to 1
Total real return on equity 3/	0.5	4.4	5.3	4.8	2.3	2 to 3
Real net return on assets financed by debt 4/	-3.5	-0.4	0.0	-0.7	-2.2	-1 to -2

F = forecast. Numbers may not add due to rounding.

1/ Rate of return on assets from current income plus rate of return from real capital gains.

2/ Average interest rate paid on farm debt minus real capital gains on debt.

3/ Rate of return on equity plus rate of return from real capital gains.

4/ Total real return on farm assets minus the real cost of debt. When the total real rate of return on assets exceeds the total real cost of farm debt, debt financing is advantageous.

**Appendix table 10--Farm financial measures: 1991-96F**

Ratios	1991	1992	1993	1994	1995F	1996F
<b>Liquidity ratios:</b>						
Farm business debt service coverage 1/	2.22	2.44	2.54	2.15	2.11	1 to 2
Debt servicing 2/	0.15	0.14	0.14	0.14	0.15	0.14 to 0.16
Times interest earned ratio 3/	4.65	5.83	5.46	5.56	4.61	4.8 to 4.9
<b>Solvency ratios:</b>						
Percent						
Debt/asset 4/	16.5	16.0	15.7	15.7	15.7	15 to 16
Debt/equity 5/	19.8	19.1	18.7	18.7	18.6	18 to 19
<b>Profitability ratios:</b>						
Return on equity 6/	2.0	3.4	2.1	2.9	1.1	1 to 2
Return on assets 7/	3.1	4.1	2.9	3.6	2.2	2 to 3
<b>Financial efficiency ratios:</b>						
Gross ratio 8/	72.7	70.6	70.9	74.7	74.3	74 to 78
Interest to gross cash farm income 9/	6.2	5.6	5.2	5.6	6.1	5 to 7
Asset turnover 10/	21.9	22.0	22.5	21.6	21.4	20 to 22
Net cash farm income to debt ratio 11/	44.7	47.5	48.7	42.2	42.8	38 to 42

F = forecast

1/ Assesses the ability of farm businesses to repay interest and principal associated with farm business debt from net cash farm income. Higher values indicate a better cash position.

2/ Indicates the proportion of gross cash farm income needed to service debt. Lower values indicate a relatively better cash position.

3/ Focuses on the ability to meet interest payments out of net farm income. A higher value of the times interest-earned ratio indicates that net farm income covers more interest expense and that operator equity is less exposed to risk.

4/ Indicates the relative dependence of farm businesses on debt and their ability to use additional credit without impairing their risk-bearing ability.

5/ Measures the relative proportion of funds provided by creditors (debt) and owners (equity).

6/ Measure the per dollar returns to equity capital employed in the farm business from current income.

7/ Measures the per dollar return to farm assets from current income.

8/ Gives the proportion of gross cash farm income absorbed by cash production expenses. The higher the value of the ratio, the less efficient the farm sector is considered to be.

9/ Gives the proportion of gross farm revenue absorbed by interest payments. Higher values indicate a relatively fixed expense structure and less flexibility in meeting cash expenses as they arise.

10/ Measures the gross cash farm income generated per dollar of farm assets. The higher the value of the ratio relative to similar sized operations, the more efficiently the farm business uses its assets.

11/ Reflects the strain placed on cash-flow to retire debt. The lower the value, the greater the stress placed on farm earnings that remain after all payments necessary to retire farm debt on schedule have been made.



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